

1 UNITED STATES DISTRICT COURT  
2 FOR THE EASTERN DISTRICT OF NORTH CAROLINA  
3 SOUTHERN DIVISION

4 IN RE: CAMP LEJEUNE )  
5 WATER LITIGATION, )  
6 )  
7 ) Case No.  
8 ) 7:23-CV-00897  
9 )

10 VIDEO DEPOSITION OF  
11 DAVID SABATINI, PH.D, PE, BCEE

12 TAKEN ON BEHALF OF THE UNITED STATES

13  
14 IN OKLAHOMA CITY, OKLAHOMA

15  
16 ON APRIL 11, 2025, AT 9:03 A.M.

17  
18  
19  
20  
21  
22 REPORTED BY: LANA L. LEDFORD, CSR

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Morris Maslia, PE  
Remy Hennet, PE  
Zina Bash, Keller Postman

VIDEOGRAPHER: Stesha Ferguson

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S T I P U L A T I O N S

It is hereby stipulated and agreed by  
and between the parties hereto, through their  
respective attorneys, that the deposition of  
DAVID SABATINI, PhD., PE, BCEE may be taken on  
behalf of the UNITED STATES on APRIL 11, 2025, in  
OKLAHOMA CITY, OKLAHOMA, by Lana L. Ledford,  
Certified Shorthand Reporter for the State of  
Oklahoma, pursuant to notice and Federal Rules of  
Civil Procedure.

\* \* \* \* \*

1 THE VIDEOGRAPHER: This is the  
2 videotaped deposition of David Sabatini. Today's  
3 date is April 11, 2025, and we are on the record  
4 at 9:03 a.m. Will counsel please state their  
5 appearances for the record.

6 MS. BAUGHMAN: Laura Baughman for the  
7 Plaintiffs.

8 MS. HORAN: Alanna Horan here on behalf  
9 of the United States, and I'm joined by my  
10 colleague, Allison O'Leary.

11 MS. HORAN: Good morning, Dr. Sabatini.

12 DR. SABATINI: Good morning.

13 MS. HORAN: I'm sorry. I think we need  
14 to do the oath first.

15 THE VIDEOGRAPHER: The court reporter  
16 will now swear the witness.

17 DAVID SABATINI, Ph.D, PE, BCEE,  
18 of lawful age, being first duly sworn, deposes  
19 and says in reply to the questions propounded as  
20 follows:

21 \* \* \* \* \*

22 EXAMINATION

23 BY MS. HORAN:

24 Q Good morning, Dr. Sabatini. Could you  
25 please state your full name for the record?

1 A David Allen Sabatini.

2 Q And what is your current address?

3 A Current...

4 Q Address.

5 A Address.

6 1632 Crestmont, C-r-e-s-t-m-o-n-t,  
7 Avenue, Norman, Oklahoma 73069.

8 Q And do you currently have a work office  
9 that you go to on a regular basis?

10 A I'm an emeritus professor so I have an  
11 office I go to several times a week.

12 Q And where is that office?

13 A It's at the University of Oklahoma.

14 Q Have you been deposed before?

15 A I was deposed once before about 40 years  
16 ago on work that I did for the railroad. But  
17 that was a short hour-or-two-long deposition  
18 about work that I had done.

19 Q And I understand it was 40 years ago.  
20 But to the best of your recollection, what was  
21 that deposition about?

22 A It was about railroad right-of-way, and  
23 a farmer had built a dike to try and prevent  
24 flooding onto his land which was encroaching upon  
25 increased water levels on the railroad

1 right-of-way -- the railroad elevated tracks. So  
2 the concern was what they did would have damage  
3 -- what the farmer had done would damage railroad  
4 property.

5 Q And were you in your capacity as an  
6 expert in that case?

7 A I was -- it was based on work I had done  
8 for the railroad. So I was testifying to work I  
9 had done for the railroad.

10 Q And you've only been deposed that one  
11 time?

12 A That's the only time. Once.

13 Q So as, I think you know, I represent the  
14 United States in this matter. And you understand  
15 that you're obligated to tell the truth today?

16 A Yes.

17 Q A court reporter is taking down  
18 everything that we say. It's important that you  
19 answer verbally. For example, you must say "yes"  
20 or "no" rather than nodding or shaking your head.

21 Does that work?

22 A Yes.

23 Q Off to a good start.

24 Please talk at a reasonable pace. The  
25 pace I'm speaking at is fine. You seem to speak



1 at a very reasonable pace as well. But just to  
2 make sure that the court reporter can take down  
3 everything we say. Fair?

4 A Fair.

5 Q We'll do our best not to interrupt each  
6 other just so the court reporter, again, can take  
7 down all of our complete questions and your  
8 complete answer. So I just ask that you please  
9 wait until I finish my question before you start  
10 to answer, and I will do my best not to interrupt  
11 you when you're speaking as well.

12 Is that fair?

13 A Fair.

14 Q Once the deposition is complete, you'll  
15 be -- you'll be given the opportunity to read the  
16 transcript of your testimony and make any  
17 corrections, and then you'll be asked to sign it.

18 Do you understand that?

19 A Understood.

20 Q Only you are testifying today. You must  
21 answer to the best of your ability. And I just  
22 ask that you not ask other people for their help  
23 in answering any questions today.

24 Fair?

25 A Understood.

1           Q     If you do not understand a question,  
2     please let me know and I'll do my best to clarify  
3     the question.  If you don't ask for  
4     clarification, I will assume that you understood  
5     the question.

6                     Is that fair?

7           A     Fair.

8           Q     Is there any reason why you're unable to  
9     give your most truthful and accurate testimony  
10    today?

11          A     No.

12          Q     What did you do to prepare for your  
13    deposition today?

14          A     I reviewed my expert rebuttal report and  
15    associated reports.

16          Q     What do you mean by "associated  
17    reports"?

18          A     I reviewed Hennet's expert report that I  
19    was responding to.  And I reviewed the AH  
20    Environmental report that was pivotal.  And I  
21    reviewed the Nakasone paper that fed into the  
22    losses over the weir and the spiractor.  And the  
23    McKone paper and the shower experiment.

24          Q     So other than reviewing your expert  
25    report, Dr. Hennet's report, the AH Environmental

1 report, the Nakasone study, and the McKone study,  
2 did you review any other documents in preparation  
3 for your deposition today?

4 A Possibly, in general. Just background  
5 information. But not specific -- not to my  
6 recollection. Oh, I reviewed Hennet's  
7 deposition. That would have been specific.

8 Q Did you review any other depositions  
9 beyond Dr. Hennet's?

10 A That's not -- not to my recollection.

11 Q Did you meet with anyone to prepare for  
12 your deposition today?

13 A I met with counsel yesterday to go over  
14 being the first time as an expert, in  
15 preparation.

16 Q And for how long did you meet with  
17 counsel yesterday?

18 A We met for two or three hours in the  
19 morning and then hour or two in the afternoon.

20 Q Besides Ms. Baughman, who I believe --

21 A Yes.

22 Q -- may have been the counsel you were  
23 with yesterday --

24 A Yes. Yes.

25 Q -- was anyone else present for that

1 prep?

2 A Not in person.

3 Q Who joined you remotely?

4 A Devin Bolton and Kevin Dean.

5 Q Have you testified in court before?

6 A No.

7 Q And I believe you said this is your  
8 first time serving as an expert witness in a  
9 case?

10 A Yes. Correct.

11 Q Have you read the complaint in this  
12 case?

13 A I'm sorry? The...

14 Q The complaint.

15 A Yes. Early on, I did, as I recall. The  
16 complaint. What -- refresh my memory of the  
17 complaint.

18 Q Sure.

19 So a complaint is a document wherein the  
20 Plaintiffs state what their allegations are.

21 Do you recall reading a document like  
22 that at any point?

23 A I think I may have, several years ago.

24 Q And to the best of your understanding,  
25 what are the Plaintiffs' allegations in this

1 case?

2 MS. BAUGHMAN: Object to the form.

3 THE WITNESS: Not remembering,  
4 specifically, the document, I'd be hesitant to  
5 speak to that.

6 Q (BY MS. HORAN) Sure.

7 So setting aside the complaint document,  
8 just generally, what is your understanding of  
9 what the Plaintiffs' claims are in this case?

10 MS. BAUGHMAN: Object to the form.

11 THE WITNESS: It's kind of an open-ended  
12 question. Can you be more specific?

13 Q (BY MS. HORAN) I'm just trying to  
14 understand what -- what you believe the  
15 Plaintiffs' allegations are. It's not -- it's  
16 just your understanding.

17 A Okay.

18 Q And it could come from any source kind  
19 of. You've -- sounds like you've been working on  
20 this for -- for a while, based on your billing  
21 records. So really just generally, what your  
22 understanding is.

23 MS. BAUGHMAN: Same objection.

24 THE WITNESS: The -- that there was  
25 groundwater contamination that resulted in

1 drinking water contamination and that there was  
2 exposure as a result.

3 Q (BY MS. HORAN) Do you personally know  
4 anyone with a pending lawsuit or administrative  
5 claim against the United States related to their  
6 time at Camp Lejeune?

7 A No.

8 Q Do you know -- or strike that.  
9 Have you ever spoken, in person or via  
10 email, with a man named Ernest Hunt?

11 A I'm sorry? With...

12 Q With a man named Ernest Hunt.

13 A I've had no personal contact.

14 Q Have you ever spoken, in person or via  
15 email, with a man named Mark Cagiano?

16 A No.

17 Q Have you ever spoken, in person or via  
18 email, or text message, phone, any of those, with  
19 a man named Jerry Ensminger?

20 A No.

21 Q Have you ever spoken, in person or via  
22 email, phone, any form of communication, with a  
23 man named Mike Partain?

24 A No.

25 Q When were you retained in this matter?

1 A It was in April of -- two years ago.

2 Q So April 2023?

3 A '23. Yes.

4 Q And how did you -- or strike that.

5 You were retained by the Bell Legal  
6 Group; is that right?

7 A Yes.

8 Q And do you recall if they contacted you  
9 or if you contacted them?

10 A They contacted me.

11 Q Had you previously worked with anyone  
12 from the Bell Legal Group?

13 A No.

14 Q Do you recall the name of the attorney  
15 that called you?

16 A Pat Telan. T-e-l-a-n.

17 Q Not exclusive to the Bell Legal Group,  
18 but have you ever worked with any of the counsel  
19 in this case before?

20 A No.

21 Q Giving your best estimate, roughly how  
22 many hours have you spent working on this case?

23 MS. BAUGHMAN: Objection to form.

24 THE WITNESS: I'd have to refer to my  
25 records. I don't recall a specific -- a number.

1 Q (BY MS. HORAN) And you've been billing  
2 hours since April of 2023. Is that fair?

3 A Yes.

4 Q And your billing records would be the  
5 best place to find out how many hours you've  
6 worked on the case?

7 A Yes.

8 (Government Exhibit 1 marked for identification)

9 Q (BY MS. HORAN) I'm marking as Exhibit  
10 1. This is a document with the Bates  
11 CL\_PLG-Expert\_Sabatini\_0000002426. And it runs  
12 through the Bates ending in 2443.

13 MS. BAUGHMAN: So what she's reading is  
14 just the number at the bottom.

15 THE WITNESS: Okay.

16 MS. BAUGHMAN: Okay.

17 THE WITNESS: Okay.

18 MS. BAUGHMAN: He doesn't know. Just so  
19 he understands. Okay.

20 Q (BY MS. HORAN) And if you have any  
21 questions like that, please feel free to ask  
22 them.

23 A Thank you.

24 Q We want to make sure you're on the same  
25 page as me.



1           A     Thank you.

2           Q     Dr. Sabatini, do you recognize these as  
3     your billing records?

4           A     Yes.

5           MS. HORAN:   So I'll just put on the  
6     record, I've looked and I've only been able to  
7     find billing records for the calendar year 2024.  
8     So we would just request the records from April  
9     '23 to December '23, and then any from 2025.

10          MS. BAUGHMAN:   So to the best of my  
11     knowledge, there aren't any from 2023.   You can  
12     ask him, but I'm not aware of them.   And I don't  
13     think they exist for 2025 yet.

14          THE WITNESS:   Yeah.   I've not --

15          MS. BAUGHMAN:   But you can ask him --

16          THE REPORTER:   Wait.   One at a time,  
17     please.

18          MS. BAUGHMAN:   Yeah.   Remember, don't --  
19     only --

20          THE WITNESS:   I'm sorry.

21          MS. BAUGHMAN:   -- one person at a time.

22          THE WITNESS:   I'm sorry.

23          MS. BAUGHMAN:   And you should only speak  
24     when she asks you a question.   Okay?

25          THE WITNESS:   Okay.

1 MS. BAUGHMAN: All right. Go ahead.

2 MS. HORAN: Sure.

3 Q (BY MS. HORAN) I think -- did you bill  
4 in 2023 calendar year?

5 A From the best of my knowledge, yes.

6 Q So there would be a record of that  
7 billing that you did in 2023; correct?

8 A That would be my understanding.

9 MS. HORAN: Okay. So we just request  
10 those documents.

11 Q (BY MS. HORAN) And you have not billed  
12 for 2025 yet?

13 A No.

14 Q Okay. And since January, roughly how  
15 many hours do you think you've worked on this  
16 case?

17 A I'd have to refer to my records.

18 Q Sure.

19 Looking at your billing records, prior  
20 to receiving the DOJ reports in December of 2024,  
21 you had drafted and finalized an expert report.

22 Fair?

23 MS. BAUGHMAN: Objection to form.

24 THE WITNESS: I had worked on a  
25 document. Yes.

1 Q (BY MS. HORAN) And in your billing  
2 records, you refer to that document as expert  
3 report. Fair?

4 A In the billing. Yes.

5 Q And you did not file that expert report  
6 in this case; correct?

7 MS. BAUGHMAN: Objection to form.

8 THE WITNESS: I'd have to defer to  
9 counsel.

10 Q (BY MS. HORAN) You don't know one way  
11 or the other whether that document was ever  
12 filed?

13 A To my knowledge, it --

14 MS. BAUGHMAN: Objection to form.

15 What do you mean filed? We don't file  
16 expert reports.

17 MS. HORAN: That's a fair correction.

18 MS. BAUGHMAN: Okay.

19 Q (BY MS. HORAN) Do you know if that  
20 document was ever provided to the United States?

21 A No. No. I mean not to my knowledge.

22 Q The first page of the Exhibit 1.

23 A Okay.

24 Q The second billing line is for January  
25 9.

1 Do you see that?

2 A Yes.

3 Q And it's for .5 hours, and it says,  
4 "Prep for 1/23 trip."

5 A Yes.

6 Q Where was that trip to?

7 A The trip did not happen.

8 Q Where was the trip anticipated to be?

9 A The trip was --

10 MS. BAUGHMAN: Wait. Hold on. I'm  
11 going to object and just refer, for your sake,  
12 and for Dr. Sabatini, to case management order  
13 number 17 which says that communications between  
14 expert and counsel are not discoverable.

15 So to the extent you need to answer any  
16 question about why a trip didn't take place,  
17 that's privileged --

18 THE WITNESS: Okay.

19 MS. BAUGHMAN: -- if it was a  
20 communication with counsel.

21 Go ahead.

22 MS. HORAN: Are you claiming privilege  
23 over where the trip was to?

24 MS. BAUGHMAN: Only if he has to rely on  
25 communications with counsel to answer the

1 questions.

2 MS. HORAN: Okay.

3 Q (BY MS. HORAN) I'll ask you, Dr.  
4 Sabatini, but please don't answer if you have to  
5 rely on your communication with counsel to answer  
6 it.

7 A Okay.

8 Q Where was the trip that you were  
9 prepping for on January 9th to?

10 A That would cause me to rely upon  
11 communications from counsel.

12 Q Okay.

13 MS. BAUGHMAN: I might have said the  
14 wrong CMO. Just for the record, it's case  
15 management order 17. I don't -- I'm not sure if  
16 that's what I said. Just -- just to correct  
17 that. But go ahead.

18 MS. HORAN: Sure.

19 Q (BY MS. HORAN) And Dr. Sabatini, we'll  
20 go throughout the whole day. So to the extent I  
21 ask you a -- I might not know.

22 A Uh-huh.

23 Q So to the extent I ask you a question  
24 and you have to rely on your communications with  
25 counsel to answer it, that rule applies

1 throughout the whole day.

2 A Thank you.

3 Q Okay. Could you please turn to the  
4 document ending -- or the page ending in 2438?

5 A 2438.

6 Q The last three entries on that page for  
7 June.

8 Do you see those?

9 A Yes.

10 Q And the entry next to June 11th says,  
11 "Consider additional calculations/analytical  
12 solutions."

13 Do you see that?

14 A Yes.

15 Q And the June 25th entry says, "Sample  
16 calculations-mass/concentrations-Tarawa Terrace."

17 Do you see that?

18 A Yes.

19 Q And the June 28th entry says, "Sample  
20 calculations-HPIA/HPLF."

21 Do you see that?

22 A Yes.

23 Q HPIA. What does that stand for?

24 A Hadnot Point Industrial Area.

25 Q And HPLF. What does that stand for?

1           A     Hadnot Point Land Fill.

2           Q     Could you turn to the last page, the  
3     page ending in 43?

4           A     (Witness complies.)

5           Q     The last billing entry for December 31st  
6     says, "Finalizing rebuttal report/Zoom call with  
7     Morris Maslia."

8                     Do you see that?

9           A     Yes.

10          Q     Did you finalize your rebuttal report on  
11     December 31st or did you continue to work in --  
12     work on it into January?

13          A     I -- as I recall, we had an extension  
14     which allowed additional time.

15          Q     So you continued to work on it into  
16     January. Fair?

17          A     I don't recall specifically because I  
18     was targeting the earlier completion date. So I  
19     don't recall. I think -- believe I did do some  
20     additional work.

21          Q     And the answer to that question would be  
22     in your billing records. Fair?

23          A     Yes.

24          Q     What is your practice with how often you  
25     bill the attorneys?

1           A     Initially, it was I sent monthly. And  
2     then at some point last year, Lori Mertz  
3     recommended quarterly. So I transitioned toward  
4     quarterly billing towards the end of last year.

5           Q     And you haven't billed for Q1 of 2025  
6     yet?

7           A     No.

8           Q     Do you anticipate doing that soon?

9           A     Probably sometime in the future.

10          MS. HORAN: We would just request those  
11     when they become available.

12          Q     (BY MS. HORAN) The second half of the  
13     last entry on Page 43 says, "Zoom call with  
14     Morris Maslia."

15                 When did you first meet Morris Maslia?

16          MS. BAUGHMAN: Hold on one second. Just  
17     -- just to be clear. So you know. Okay? Case  
18     management order 17 says you don't talk about  
19     your communications with --

20                 THE WITNESS: Right.

21          MS. BAUGHMAN: -- other experts. But  
22     when you --

23                 THE WITNESS: When. Time.

24          MS. BAUGHMAN: You can answer that  
25     question. Okay? Go ahead.



1 THE WITNESS: Okay. Thank you.

2 I've not met Morris Maslia in person.

3 Q (BY MS. HORAN) When did you first speak  
4 with Morris Maslia?

5 A As I recall, there was a general  
6 information Zoom with --

7 MS. BAUGHMAN: Just when.

8 THE WITNESS: When. When. Thank you.  
9 In mid to late '23.

10 Q (BY MS. HORAN) And do you recall who  
11 else was on that Zoom in end of 2023?

12 A There were multiple people, but I don't  
13 recall. That was so long ago.

14 Q And roughly how many times have you  
15 spoken with Morris Maslia since then?

16 A Two times. At most, three.

17 Q Besides Morris Maslia, to the best you  
18 can recall, have you spoken with any other  
19 Plaintiffs' experts?

20 A Not that I recall. I'm trying to think  
21 through. No.

22 Q You don't recall ever speaking with a  
23 man named Dr. Aral Mustafa?

24 A No.

25 Q Have you ever spoken with Dr. Konikow?

1           A     No.   Well, not related to this case.

2           Q     Had you previously worked with Dr.  
3     Konikow?

4           A     Well, I was trying to -- I may have met  
5     him at a conference years ago.

6           Q     Do you recall ever speaking with Jones  
7     or Davis?

8           A     No.

9           Q     Did you have any help in preparing your  
10    expert report?   And again, I'm not asking about  
11    attorneys.

12           MS. BAUGHMAN:   So not lawyers.   Anyone  
13    else.

14           THE WITNESS:   Say again?

15           MS. BAUGHMAN:   Okay.   She's asking you  
16    if you had help preparing your report, but she's  
17    not talking about any lawyers or anyone who's  
18    employed by a lawyer.

19           THE WITNESS:   No.

20           Q     (BY MS. HORAN)   So no grad students or  
21    anything?

22           A     No.

23           Q     Okay.   Did you write your expert report  
24    yourself?

25           A     Yes.

1           Q     Okay.  You can put Exhibit 1 to the  
2 side.

3           A     (Witness complies.)

4           MS. BAUGHMAN:  So we just keep, like, a  
5 stack because sometimes she might go back to  
6 these.  Okay.

7           THE WITNESS:  Okay.

8           (Government Exhibit 2 marked for identification)

9           Q     (BY MS. HORAN)  I'm marking as Exhibit 2  
10 -- this is a document with the title Expert  
11 Rebuttal Report of David Sabatini Ph.D, PE, BCEE,  
12 January 14, 2025.

13           Take as long as you'd like to flip  
14 through it, but do you recognize this as your  
15 written expert report that you submitted in this  
16 case?

17           A     Yes.  At least the cover page certainly.  
18 I assume the rest of the document.

19           Q     Do you want to flip through it just to  
20 make sure it's all there?

21           A     Sure.  Let me...

22           MS. BAUGHMAN:  Do you want him to look  
23 at every page or what do you want him to do?

24           MS. HORAN:  Just generally.

25           THE WITNESS:  Make sure there's -- this

1 looks -- it looks complete. Yes.

2 Q (BY MS. HORAN) All right. And this is  
3 the report that you reviewed in preparation for  
4 your deposition today?

5 A Yes.

6 Q Having reviewed your report in  
7 preparation for today, are there any corrections  
8 to the opinions you offered that you would like  
9 to make?

10 A No.

11 Q You can set that to the side.

12 A (Witness complies.)

13 (Government Exhibit 3 marked for identification)

14 Q (BY MS. HORAN) I'm marking as Exhibit 3  
15 -- this is a document with the title January 2025  
16 Rebuttal Expert Report of David Sabatini  
17 Supplemental Amended Materials Considered List  
18 dated April 9, 2025.

19 Dr. Sabatini, does -- do you recognize  
20 this document?

21 A Yes.

22 Q Have you seen it before?

23 A Yes.

24 Q And you recognize this as your  
25 supplemental materials considered list. Fair?

1           A     Yes.

2           Q     We -- does this include all of the  
3 materials you reviewed as an expert?

4           A     To the best of my knowledge, yes. I  
5 mean, there were so many documents, but yes, this  
6 -- yes.

7           Q     Is there anything you've reviewed since  
8 April 9th that you would like to add to this list  
9 today?

10          A     No.

11          Q     So the materials considered list that we  
12 originally received in January went to Page 8,  
13 and then everything from Page 9 onward was added  
14 to the April 9, 2025 list.

15                Is that your understanding that there  
16 was an update on April 9th?

17          A     That's my understanding. Yes.

18          Q     So since filing your report in January  
19 of 2025, you've since reviewed these 21 pages of  
20 materials? Is that fair?

21                MS. BAUGHMAN: Objection to form.

22                THE WITNESS: Yes.

23          Q     (BY MS. HORAN) And when did you first  
24 receive the information -- or strike that.

25                When did you first receive the documents

1 on Pages 9 through 30 of this list?

2 A I don't recall.

3 Q Did you review any of the materials on  
4 Page 9 through 30 of your materials considered  
5 list prior to submitting your rebuttal report in  
6 January?

7 MS. BAUGHMAN: Objection to form.

8 THE WITNESS: I may have, but I don't  
9 recall.

10 Q (BY MS. HORAN) Have you reviewed all of  
11 the materials, all 30 pages of these materials?

12 A To varying degrees, yes.

13 Q The materials in -- listed on Page 9  
14 through 30 are not directly cited in your  
15 rebuttal report.

16 Is that fair?

17 MS. BAUGHMAN: Objection to form.

18 THE WITNESS: To the best of my  
19 recollection.

20 Q (BY MS. HORAN) Could you turn to Page  
21 11? It starts on Page 11 at the very bottom. Or  
22 strike that. It's actually on Page 12.

23 On Page 12 of your materials considered  
24 list, you have a number of depositions listed.

25 Do you see that?

1 A Yes.

2 Q You mentioned that you reviewed Dr.  
3 Hennet's deposition in preparation for today.  
4 Looking at this list now, did you review any  
5 other depositions in preparation for today?

6 A I looked at the deposition of Ernest  
7 Hunt and Mark Cagiano.

8 Q Have you read all of the depositions  
9 listed on Page 12?

10 A To varying degrees.

11 Q When you say "to varying degrees," what  
12 -- what do you mean?

13 A Some in detail and some just briefly.  
14 Some were more pertinent than others.

15 Q Have you attended any depositions in  
16 this matter?

17 MS. BAUGHMAN: Objection to form.  
18 Do you mean in person or...

19 Q (BY MS. HORAN) No. Remotely or in  
20 person. At all in any way. Phone call.

21 A Yes.

22 Q Which ones have you attended remotely,  
23 in person, or a phone call?

24 A One.

25 Q And which one was that?

1 A Hennet.

2 Q The materials you have listed on Page  
3 9 --

4 A I don't know if this is worth  
5 commenting. Some of these CLJs may have been in  
6 my appendix. I'm not sure.

7 Q When you say appendix, Dr. Sabatini, are  
8 you referring to the water buffalo Appendix A?

9 A Yes.

10 Q Now, that has its own materials  
11 considered list.

12 A Okay.

13 Q Is that fair? Or -- you're welcome to  
14 look at your report next to you if you'd like.

15 A Yes.

16 Q So are those separate materials  
17 considered lists or is this materials considered  
18 list inclusive of all of your documents?

19 MS. BAUGHMAN: If you know.

20 THE WITNESS: Yeah, I -- I'm not clear.  
21 I'm not sure. Trying to be comprehensive.

22 Q (BY MS. HORAN) Sure.

23 Why did you provide a second materials  
24 considered list with your Appendix A as opposed  
25 to just one for the entire report?



1 MS. BAUGHMAN: Objection to form.

2 THE WITNESS: I'm not sure. Can you --

3 Q (BY MS. HORAN) Sure.

4 A I'm not sure the question.

5 Q Sure.

6 So your Appendix A has a materials  
7 considered list -- and again, you're welcome to  
8 look at it.

9 A Yeah.

10 Q Why did you decide to provide its own  
11 materials considered list with your Appendix A --

12 MS. BAUGHMAN: Objection to form.

13 Q (BY MS. HORAN) -- separate from the one  
14 attached to your report?

15 MS. BAUGHMAN: Objection to form.

16 Well, this wasn't attached to his  
17 report. Exhibit 3 was not attached to his  
18 report. So I'm going to object to that.

19 MS. HORAN: Sure.

20 Q (BY MS. HORAN) So separate from the one  
21 that was on April 9th, you have a materials  
22 considered list affixed to your Appendix A.

23 A Yeah.

24 Q Is that fair?

25 A These were pertinent to the report, and

1 my only --

2 MS. BAUGHMAN: It's a reference list;  
3 it's not a materials considered list. So I'm  
4 going to object to that.

5 THE WITNESS: I guess the only thing I  
6 was trying to comment, I didn't know if -- in an  
7 effort to be comprehensive, if some of these  
8 might have also been listed here.

9 Q (BY MS. HORAN) Okay. So you're not  
10 sure?

11 A No.

12 Q Okay. Since submitting your expert  
13 report in January of 2025, why did you decide to  
14 review the documents in Pages 9 through 30?

15 MS. BAUGHMAN: Object to the form.

16 THE WITNESS: I don't recall.

17 Q (BY MS. HORAN) Okay. You can set that  
18 aside.

19 A (Witness complies.)

20 Q Could you turn to Exhibit B of -- of  
21 Exhibit 2 which is your expert report? I believe  
22 it is your resumé.

23 A My vitae?

24 Q Yes.

25 Any changes since you've submitted this

1 vitae in December of 2024?

2 A I believe not. I don't think there's  
3 any articles. Book six is almost released. But  
4 I don't think it's yet released. On Page 3.  
5 Book six. So that may have an April date on it.

6 Q And that's Surfactant Formulation  
7 Engineering Using HLD and NAC.

8 A Yes.

9 Q That book.

10 A Yes.

11 Q And you're a co-author on that book?

12 A Yes.

13 Q Other than that that book might have  
14 been released by now, anything else that you can  
15 think of?

16 A Minor detail, but then a couple of the  
17 chapters in that book will also -- dates will be  
18 updated.

19 Q Sure.

20 A So co-edited, co-authored the book, and  
21 then several chapters in the book.

22 Q Sure.

23 Anything else?

24 A No.

25 Q Presently, your professional roles

1 include the associate director of the Institute  
2 for Applied Surfactant Research, you are an  
3 adjunct professor at the University of Ethiopia,  
4 and one university in Thailand.

5 A Correct.

6 Q And you are a partner at Surfactant  
7 Associates.

8 A Yes.

9 Q Is that an accurate summary of your  
10 present professional roles?

11 A Yes.

12 Q In this case are you contracted directly  
13 and personally with the Plaintiffs' leadership  
14 group or is it through an entity?

15 MS. BAUGHMAN: Objection to form.

16 THE WITNESS: I'm sorry. Ask again.

17 Q (BY MS. HORAN) Sure.

18 So are you contract -- let me rephrase.

19 You have a role in a number of  
20 organizations. Is your contract to do work on  
21 this case with one of those entities and then you  
22 work on it or is it with -- directly with you?

23 A Directly with me.

24 Q And you received a bachelor's degree in  
25 civil engineering from the University of Illinois

1 in 1981?

2 A Correct.

3 Q And you received a master's degree in  
4 civil engineering from Memphis State in 1985?

5 A Correct.

6 Q And you received a Ph.D from Iowa State  
7 University in 1989?

8 A Correct.

9 Q What is your Ph.D in?

10 A It's in civil engineering. With an  
11 environmental emphasis.

12 Q What does that mean?

13 A Within civil engineering, there's  
14 structural engineering, geotechnical engineering,  
15 transportation engineering, and environmental  
16 engineering. So my specialty was in the  
17 environmental engineering side of civil  
18 engineering.

19 Q You have a paper listed. "Sorption and  
20 transport of Atrazine Alachlor and Fluorescent  
21 Dyes in Alluvial Aquifer Sands."

22 Was that your Ph.D thesis?

23 A Yes. Part of it.

24 Q What was the other part? If you could  
25 identify it for us.

1           A     I'd have to remember back at my papers,  
2     but there was another paper that was published  
3     out of my dis-- but it was same topic.

4           Q     Was it published around the same time?

5           A     Yes.

6           Q     After your Ph.D, you became an assistant  
7     professor and then a full professor at the  
8     University of Oklahoma?

9           A     Assistant, and then associate, and then  
10    full.   Yes.

11          Q     And I believe you said now, you're a  
12    professor emeritus?

13          A     Emeritus.   Yes.   No problem.

14          Q     Sorry about that.

15          A     No problem.

16          Q     And do you still teach classes?

17          A     Yes.

18          Q     What classes do you teach?

19          A     I teach a course on fundamentals of  
20    water security, quantity, quality, and equity in  
21    a changing climate.

22          Q     Anything else?

23          A     That's the only university course I  
24    teach.   I teach a short course to industry.

25          Q     And what course is that?

1           A     It's fundamental and applied aspects of  
2     surfactants.

3           Q     And you teach that to the industry you  
4     said?

5           A     Yes.

6           Q     So what does that mean?

7           A     We go to industries that -- as associate  
8     director of the Institute for Applied Surfactant  
9     Research, we have industrial sponsors of our  
10    institute and they ask us to come and teach a  
11    two-and-a-half-day short course at their company.  
12    And we'll go -- my colleague and I go and we team  
13    teach -- trade off teaching -- for two and a half  
14    days, this course to chemical companies.

15          Q     In either of those courses, the one to  
16    students or the one to industry, do you talk  
17    about Camp Lejeune?

18          A     Briefly in the water security, in one  
19    lecture, I briefly mention that -- I talk about  
20    superfund and show a map of the United States of  
21    all the superfund sites. And then I mention that  
22    Camp Lejeune is one of those contaminated sites.

23          Q     Besides that one mention in terms of  
24    superfund sites --

25          A     No. That's all.

1 Q No.

2 Is there a PowerPoint or anything you  
3 put together for that class?

4 A Yes.

5 Q We would just request a copy of that  
6 PowerPoint.

7 A Okay.

8 MS. BAUGHMAN: Well, we'll talk about  
9 that later. I don't -- you didn't -- I mean  
10 there was no official request for that so I don't  
11 think we'll be providing that. But you can  
12 follow up with me. I didn't see a document  
13 request for such a document.

14 MS. HORAN: Sure. We can deal with that  
15 on the back end, but we just request it.

16 THE WITNESS: Okay.

17 Q (BY MS. HORAN) And you as a professor  
18 emeritus --

19 MS. BAUGHMAN: Emeritus.

20 Q (BY MS. HORAN) Emeritus.

21 THE WITNESS: Yeah.

22 Q (BY MS. HORAN) -- are you retired from  
23 your role as a professor or do you -- is that  
24 considered a retirement role or how does that  
25 work?



1 MS. BAUGHMAN: Objection to -- objection  
2 to the form.

3 THE WITNESS: It's my -- I don't -- I  
4 don't know how to say this. Quazi retired.

5 Q (BY MS. HORAN) Quazi retired.

6 Do you still get a salary from the  
7 University of Oklahoma?

8 A When I teach a course, I do. But not on  
9 a monthly -- when I'm not teaching a course, I  
10 don't.

11 Q You're a professional engineer; correct?

12 A Correct.

13 Q And you've taken and passed both of the  
14 professional engineer tests?

15 A Yes.

16 Q Have you ever failed a test to become a  
17 professional engineer?

18 A No.

19 Q Your report has David Sabatini, Ph.D,  
20 PE, BCEE on the front.

21 The PE stands for professional engineer?

22 A Correct.

23 Q What does the BCEE stand for?

24 A It stands for board certified  
25 environmental engineer.

1           Q     And could you describe for me what that  
2     licensing or certification is?

3           A     It's through the associate -- American  
4     Association of Environmental Engineering and  
5     Scientists. And it's -- you can gain that  
6     designation either by taking a written and an  
7     oral exam -- or if you're considered a person of  
8     eminence, your record can gain you that  
9     recognition.

10          Q     And when did you receive that  
11     recognition?

12          A     Oh, goodness.

13          Q     More than 20 years ago? More than ten?

14          A     I'd say 15 to 20 years ago. In that  
15     range. I'd have to look to my records.

16          Q     Sure.

17                 And you would look at your resumé to  
18     find that out?

19          A     Say again.

20          Q     Or where -- where would you look to find  
21     that information out?

22          A     I guess I don't have it on my resumé. I  
23     think I do have my PE. But anyway, I'm not sure.

24          Q     Other than your professional engineering  
25     licensure and your BCEE certification or

1 licensure, do you have any other licenses?

2 A No.

3 Q You've worked on projects regarding  
4 cleanup at military bases; correct?

5 A Correct.

6 Q And which projects have you worked on?

7 A Oh, there's a range. Hill Air Force  
8 Base. Dover Air Force Base. What's the one in  
9 California? Naval Air Station. Those are --  
10 there are several. I'd have to look at my  
11 records to remember.

12 Q Where -- where would you look to  
13 remember?

14 A Should be in my...

15 Q It should be in your resumé?

16 A Yeah.

17 Q Okay. You mentioned Hill. Could you  
18 describe your role in that project?

19 A The -- it was a research project to look  
20 at developing advanced technologies for cleaning  
21 up groundwater contamination.

22 Q You mentioned Dover. Could you  
23 describe --

24 A The same -- same type. We developed a  
25 technology in the laboratory and approved

1     successful so then we went to these field sites  
2     to demonstrate.

3           Q     You said "we".  Who did you work with on  
4     this project?

5           A     Well, colleagues at the University of  
6     Oklahoma.

7           Q     Okay.  And you mentioned one in  
8     California.

9           A     Yeah.

10          Q     What was your role in that?

11          A     Same.  Field demonstration.

12          Q     How did you become involved in the Hill  
13     project?

14          A     We competed nationally for a large  
15     research grant to take our technology from the  
16     laboratory into the field.  It was funded by the  
17     Environmental Protection Agency.

18          Q     Is that the same way you became involved  
19     with the Dover project?  Or how did you become  
20     involved there?

21          A     That was the same program funding.

22          Q     And is that the same with the California  
23     project?

24          A     Yes.  That -- I'd have to look back at  
25     my records.  But yes, the same general.  That may

1 have actually been our company. We started a  
2 company, Surbec Environmental, that was  
3 implementing our technology. That may have been  
4 a Surbec project.

5 Q And the "we" is your colleagues at the  
6 University of Oklahoma still?

7 A Yes.

8 Q You mentioned receiving funding from the  
9 EPA; correct?

10 A Correct.

11 Q Have you ever received funding or grants  
12 from any other government agency?

13 A Yes. Department of Defense. Department  
14 of Energy. As I recall.

15 Q Did the grant you received from the  
16 Department of Defense have anything to do with  
17 groundwater?

18 A Remediation. Yes.

19 Q And what was that grant related to?

20 A I'd have to look back in my -- I'd have  
21 to look -- same. I don't recall the specific  
22 details. That's 30 years ago. Twenty-five years  
23 ago.

24 Q Sure.

25 And then the -- do you recall what the

1 grant funding from the Department of Energy was  
2 for?

3 A It's all related to the groundwater  
4 remediation.

5 Q Were you involved in the groundwater  
6 contaminant cleanup at Camp Lejeune?

7 A Say again.

8 Q Were you involved in the groundwater  
9 contaminant cleanup or remediation at Camp  
10 Lejeune?

11 A No.

12 Q Did you ever compete for a grant to be  
13 involved in the Camp Lejeune contaminant cleanup?

14 A No. Not to my knowledge.

15 Q To the best of your memory, were you  
16 ever asked to be involved in the contaminant  
17 cleanup at Camp Lejeune?

18 A No.

19 Q Do you know anyone who was involved in  
20 the contaminant cleanup at Camp Lejeune?

21 A Not to my knowledge.

22 Q Have you ever personally served in the  
23 military?

24 A No.

25 Q Have you ever been to a military base?

1           A     The bases that we described.

2           Q     So part of your work with Hill, Dover,  
3     and the project in California was you going to  
4     the base.

5           A     We were physically implementing the  
6     technology at those sites.

7           Q     Other than your -- through your  
8     professional work on Hill, Dover, and the  
9     California base, can you recall ever visiting any  
10    other military bases?

11          A     Tinker Air Force Base in Oklahoma City.  
12    Military base in Germany where I taught a short  
13    course, but that base was being closed. That's  
14    all I can remember.

15          Q     What was the course you taught in  
16    Germany?

17          A     It was on groundwater contamination  
18    remediation.

19          Q     And you said it was -- the base was  
20    being closed? Is that fair?

21          A     Say again.

22          Q     Did you say that the base was being  
23    closed?

24          A     Yeah. They were -- yes.

25          Q     Were you there to help them close the

1 base?

2 A No. No.

3 Q Why were you there?

4 A As part of reverting their base back to  
5 the home country, there was value added in terms  
6 of buildings, but there was value detracted by  
7 virtue of contamination. And so the personnel  
8 were gaining understanding of contamination  
9 remediation to help understand that aspect of the  
10 base reversal.

11 Q Have you ever been to Camp Lejeune?

12 A No.

13 Q Do you have any training or hist- -- or  
14 strike that.

15 Do you have any training or education in  
16 history?

17 A History? No.

18 Q Do you have any formal training or  
19 education in historical military practices?

20 A No.

21 MS. BAUGHMAN: Wait. Wait. Did you  
22 want to amend your answer?

23 THE WITNESS: Well, I mean, I've taken  
24 several -- I guess it's not training. I've taken  
25 several courses on Lincoln from history. And I'm



1 writing a book on Lincoln and engineering. So I  
2 don't know if that constitutes the degree of --  
3 and I guess I would say when we do research, we  
4 -- it depends upon what you mean by history.  
5 When we do research, we have to research the  
6 history of what we're working on to be able to  
7 build upon it. So anyway. That's -- I guess  
8 that's what I wanted to say.

9 Q (BY MS. HORAN) Sure.

10 And your -- I believe you said your --  
11 you've studied the Lincoln era and you're writing  
12 a book on the Lincoln era.

13 Are there any other eras of history or  
14 military history that you've spent more time  
15 interested in?

16 A In saying that Lincoln was an engineer,  
17 one of my advisors on my book said, well, write  
18 about the engineering presidents. And three of  
19 those were military academy graduates. So I've  
20 studied their time period and their history. So  
21 I don't know if that fits in to what you're  
22 talking about or not. But that would be Grant,  
23 Eisenhower, and Carter.

24 Q So have you spent any time studying or  
25 received any education on historical military

1 practices from the 1950s to the 1980s?

2 MS. BAUGHMAN: Object to the form.

3 THE WITNESS: Well, Eisenhower is in  
4 that period, but I guess I'd say no.

5 Q (BY MS. HORAN) Have you ever taught any  
6 courses on history?

7 A I've given seminars. Not semester-long  
8 courses, but I've given seminars on Lincoln.  
9 Leadership Lincoln and engineering. Lincoln's  
10 faith journey.

11 Q Other than seminars on Lincoln, have you  
12 taught any other history seminars or courses?

13 A I teach a Bible class at church which  
14 gets into a lot of history. But other than that,  
15 I'd say no.

16 Q Could you turn back to Exhibit 2 which  
17 is your report? Actually, I think you still have  
18 it in front of you.

19 A I'm sorry. Which?

20 Q Your report. You've got it in front of  
21 you.

22 A Okay. I thought you mentioned a page  
23 number.

24 Q I'm going to get there. If you could  
25 turn to Page 1 of Exhibit 2, the last sentence

1 reads, "My background and experience sufficiently  
2 and uniquely qualify me to comment on the fate of  
3 contaminants in Camp Lejeune water treatment  
4 plants and distribution systems as well as the  
5 ultimate delivery of contaminated drinking water  
6 to marines and their family members."

7 Did I read that correct?

8 A Correct.

9 Q So you're not offering opinions in this  
10 case on the fate and transport of contaminants in  
11 the groundwater at Camp Lejeune.

12 Fair?

13 A Correct.

14 MS. BAUGHMAN: Object to the form.

15 THE WITNESS: Correct.

16 Q (BY MS. HORAN) And you're not offering  
17 opinions on the fate and transport of  
18 contaminants through the soil at Camp Lejeune;  
19 correct?

20 MS. BAUGHMAN: Object to the form.

21 THE WITNESS: Correct.

22 Q (BY MS. HORAN) You can set that exhibit  
23 aside.

24 A (Witness complies.)

25 Q When was the first time you became aware

1 of the water modeling happening related to Camp  
2 Lejeune?

3 A After I was contacted about the case.

4 Q So when this -- or strike that.

5 When the water modeling was happening in  
6 the early 2000s, you were unaware of it.

7 Is that fair?

8 A Correct.

9 Q Have you read the ATSDR reports on water  
10 modeling done at Camp Lejeune?

11 A Yes. Well, yes. There are many, many,  
12 many reports. And I've read many of them. The  
13 ones focused on -- yes.

14 Q Which -- to the best of your memory,  
15 which ones have you read or what was the subject  
16 matter of the reports that you've read?

17 MS. BAUGHMAN: Objection. Object to the  
18 form.

19 THE WITNESS: Certainly read the summary  
20 reports for both, in detail. And then some of  
21 the other supporting ones. I'd have to look back  
22 to remember.

23 Q (BY MS. HORAN) And would all of the  
24 reports that you've read relating to the ATSDR  
25 water modeling be on your updated materials

1 considered list?

2 A Yes.

3 Q I'm happy to have you look at that list.  
4 It should be next to you.

5 A This list? (Indicating)

6 Q Yes. So that's Exhibit 3 that you have  
7 in front of you now. So could you identify which  
8 of the ATSDR reports you've read in detail?

9 MS. BAUGHMAN: So those are listed  
10 throughout the documents. You'll have to go page  
11 by page and just look at -- because they're not  
12 separated by these are the ATSDR. So it's listed  
13 by the -- the first author.

14 THE WITNESS: So you're asking me just  
15 to look through the list and try and recall.

16 Q (BY MS. HORAN) Sure. Exactly.

17 MS. BAUGHMAN: The question is, if he's  
18 read them or reviewed them?

19 MS. HORAN: Uh-huh.

20 MS. BAUGHMAN: Okay.

21 MS. HORAN: The question is whether --

22 Q (BY MS. HORAN) Which ATSDR reports,  
23 sitting here today, do you recall reading in  
24 detail?

25 MS. BAUGHMAN: In detail. Okay. Object

1 to the form.

2 THE WITNESS: There's so many of them  
3 it's hard to remember which specific ones.

4 Q (BY MS. HORAN) Just what you can  
5 remember, Dr. Sabatini.

6 MS. BAUGHMAN: Take your time.

7 THE WITNESS: Okay. On Page 2. I'm  
8 really hard-pressed to remember just specifics,  
9 but I do remember several.

10 Q (BY MS. HORAN) Well, perhaps --

11 MS. BAUGHMAN: Wait. Were you finished  
12 answering?

13 THE WITNESS: Yes. I'm -- I might be  
14 able to identify the few specifically, but I'm  
15 not sure I'll be able to identify all that I've  
16 reviewed.

17 Q (BY MS. HORAN) Sure. If you could  
18 identify the few specifically, that would be  
19 great.

20 A Okay. I remember the Faye, et. al.  
21 Faye on Page 2.

22 Q All of those?

23 A No, no. I'm...

24 Q Okay.

25 A As I recall, the best of my recollection

1 -- I don't want to speculate. I think F and C.  
2 2007. 2008. Really I think it's the...

3 Specifically, ATSDR you asked?

4 Q Uh-huh.

5 A I guess the -- Page 4. There may have  
6 been others that I'm missing. Page 4, Maslia  
7 2005 Expert Peer -- Peer Review Panel. Maslia  
8 2009 Expert Panel. Maslia Chapter A, 2007.  
9 Maybe Chapter I. 2013. Chapter A.

10 So those -- just to highlight some.

11 Q Sure.

12 A Some of the ones.

13 And some I looked at in lesser details.  
14 Those would be the ones I recall looking at in  
15 detail.

16 Q Sure.

17 And you mentioned also looking in detail  
18 of the summaries of both Hadnot Point and Tarawa  
19 Terrace?

20 A I think those were the As.

21 Q Sure.

22 A As I recall.

23 Q You can set that aside.

24 A (Witness complies.)

25 Q But again, if you ever need it during

1 the deposition, feel free to take a look at it.

2 A Okay. Thank you.

3 Q Other than your opinion that the ATSDR  
4 model indirectly accounts for VOC losses during  
5 the water treatment storage and distribution, you  
6 are not offering opinions on the ability of ATSDR  
7 water model to determine historic contaminant  
8 exposure levels in the water supply for  
9 individuals; correct?

10 MS. BAUGHMAN: Object to the form.

11 THE WITNESS: There's a lot to that  
12 statement. Could you repeat that?

13 Q (BY MS. HORAN) Sure.

14 Other than your opinion that the ATSDR  
15 model indirectly accounts for VOC losses, you're  
16 not offering any opinions on the ability of  
17 ATSDR's water model to determine historic  
18 contaminant exposure levels in the water supply  
19 for individuals who lived at Camp Lejeune.

20 MS. BAUGHMAN: Objection to form.

21 THE WITNESS: I'm not sure if my second  
22 opinion which says that they did use treated  
23 water to calibrate their model may fall in to  
24 what you're saying.

25 Q (BY MS. HORAN) Sure.



1           So other than that opinion --

2           A     Other than my three opinions.

3           Q     Sure.  And only your second opinion  
4 relates to the ATSDR model.  Is that fair?

5           MS. BAUGHMAN:  Objection to form.

6           THE WITNESS:  To the extent that it  
7 demonstrates that treated water samples were used  
8 in the -- in the analysis.

9           Q     (BY MS. HORAN)  Sure.

10          A     Correct.

11          Q     Your opinion 1 does not reference the  
12 ATSDR water modeling; correct?

13          A     No.

14          Q     And your opinion 3 does not reference  
15 the ATSDR modeling; correct?

16          A     Correct.

17          Q     So other than your second opinion which  
18 references the ATSDR model, you're not offering  
19 any other opinions on the ability of ATSDR's  
20 water model to determine historic contaminant  
21 exposure levels in the water supply for  
22 individuals who lived or worked at Camp Lejeune.

23                 Is that fair?

24          MS. BAUGHMAN:  Objection to form.

25          THE WITNESS:  Excluding the impact this

1 might have had, no. I agree.

2 Q (BY MS. HORAN) We've been going about  
3 an hour. Would you like to take a short break?

4 MS. BAUGHMAN: Just if you need it. If  
5 you're good to go, we can keep going.

6 THE WITNESS: We can go a little bit  
7 longer.

8 Q (BY MS. HORAN) Okay. And I don't  
9 remember if I said this at the beginning, but if  
10 I didn't, if you ever need a break, happy to take  
11 it whenever you would like it.

12 A Thank you.

13 Q I just ask that if the question is  
14 pending, you just answer the question and then  
15 we'll take the break.

16 A Sounds good.

17 Q Okay. You've read the expert report of  
18 Dr. Alex Spiliotopoulos; correct?

19 A I glanced at it.

20 Q And you haven't offered any opinions in  
21 your report commenting on Dr. Spiliotopoulos --

22 A Oh, his report. I'm sorry.

23 (Simultaneous crosstalk)

24 THE REPORTER: Wait. Any opinions in  
25 your report.

1 MS. HORAN: Commenting on Dr.  
2 Spiliotopoulos's opinions.

3 THE WITNESS: And I -- I should restate  
4 what I said. I was -- when you asked the  
5 question, I was thinking his deposition.

6 No, I did read his report fully.

7 Q (BY MS. HORAN) And you haven't offered  
8 any opinions in your report commenting on Dr.  
9 Spiliotopoulos's opinions in his report; correct?

10 A Correct.

11 Q You can -- if you can open your report  
12 again which is Exhibit 2. And turn to Page 2.

13 A (Witness complies.)

14 Q The second paragraph says, to start, "My  
15 methodology for assessing Dr. Hennet's expert  
16 report opinions 2, 10, and 13..."

17 Do you see that?

18 A Yes.

19 Q So you've only assessed Dr. Hennet's  
20 opinions 2, 10, and 13?

21 A Correct.

22 Q You did not assess Dr. Hennet's other  
23 opinions; correct?

24 A Correct.

25 Q And you agree with Dr. Hennet that there

1 would be VOC losses during the storage  
2 distribution -- strike that.

3 You agree with Dr. Hennet that there  
4 would be VOC losses during the storage treatment  
5 and distribution of water at Camp Lejeune;  
6 correct?

7 MS. BAUGHMAN: Objection to form.

8 THE WITNESS: I agree that there was a  
9 potential for losses.

10 Q (BY MS. HORAN) And your disagreement  
11 with Dr. Hennet is in the amount of VOC losses at  
12 the water treatment plants and its reservoirs.

13 Is that fair?

14 MS. BAUGHMAN: Objection to form.

15 THE WITNESS: In -- yes.

16 Q (BY MS. HORAN) And you agree with Dr.  
17 Hennet that there would be VOC losses through the  
18 use of water buffaloes.

19 Is that fair?

20 MS. BAUGHMAN: Objection to form.

21 THE WITNESS: The potential for losses.  
22 Yes.

23 Q (BY MS. HORAN) You said, "The potential  
24 for losses." What do you mean by that?

25 A The -- the potential is there. It's a

1 question of the magnitude of the losses.

2 Q Sure.

3 So there would be losses. And your  
4 disagreement with Dr. Hennet is in how much of  
5 the losses.

6 A The degree --

7 MS. BAUGHMAN: Objection to form.

8 THE WITNESS: Yeah. The degree.

9 Q (BY MS. HORAN) And as to water  
10 buffaloes, your disagreement with Dr. Hennet  
11 again is in the amount of losses through the  
12 filling and use of the water buffaloes.

13 Fair?

14 MS. BAUGHMAN: Objection to form.

15 THE WITNESS: Correct.

16 Q (BY MS. HORAN) Throughout today, if I  
17 refer to VOCs or contaminants of concern, then  
18 I'm referring, collectively, to PCE, TCE,  
19 Benzene, 1,2-DCE, and BC .

20 Do you understand that?

21 A Yes.

22 Q And if I'm referring to one of those  
23 contaminants of concern, then I'll call it by  
24 name.

25 Does that work for you?

1           A     You'll refer to it as...

2           Q     If I'm referring to one of those  
3     contaminants, I'll just use its name.

4                     Is that fair?

5           A     Sounds good.

6     (Government Exhibit 4 marked for identification)

7           Q     (BY MS. HORAN) I'm marking as Exhibit 4  
8     -- this is a document with a Bates  
9     CL\_PLG-expert\_Sabatini\_0000002424.

10                  Dr. Sabatini, have you seen these  
11     before?

12          A     Yes.

13          Q     And what are they?

14          A     They are my notes.

15          Q     And what are they your notes from?

16          A     Notes from my conversation with Chris  
17     Mattingly.

18          Q     And who is Chris Mattingly?

19          A     Chris Mattingly is the director of water  
20     utilities for the City of Norman and formerly  
21     operated the Norman Water Treatment Plant.

22          Q     Is Mr. Mattingly retired?

23          A     Say again.

24          Q     Is he retired?

25          A     No.

1 Q What is his role now?

2 A He's currently -- he's currently the  
3 Norman director of water utilities.

4 Q And you met with Mr. Mattingly on  
5 December 18, 2024. Is that fair?

6 A Correct.

7 Q And did you write these notes in your  
8 meeting with Mr. Mattingly or did you get home  
9 and write them later in time?

10 A Sometimes, I take notes, and then to  
11 make them more presentable, I rewrite them.

12 Q Is that what you did with these?

13 A I don't -- I don't recall. Likely.

14 Q Did you meet with Mr. Mattingly in  
15 person or was it via the phone?

16 A It was on the phone.

17 Q And why -- or strike that.

18 Did -- did you reach out to Mr.  
19 Mattingly to talk to him?

20 A Yes.

21 Q And why -- what was the purpose of your  
22 reaching out to Mr. Mattingly?

23 A The main purpose was because of the  
24 recarbonation basin operation.

25 Q And what did you want to ask Mr.

1 Mattingly about the recarbonation basin?

2 A Relative to the operation of a  
3 recarbonation basin, the CO2 injection into the  
4 recarbonation basin.

5 Q So did you want to know how much CO2 was  
6 injected or what -- what was your -- finding out  
7 how it worked? What was your goal?

8 A Hennet -- Hennet had suggested that  
9 there be significant losses during recarbonation,  
10 and as I recall, he used the analogy of air  
11 stripping. And I knew that air stripping has a  
12 very high air-to-water ratio to promote air  
13 stripping where as I know in recarbonation basin,  
14 you're trying to dissolve all the carbon dioxide  
15 into the water.

16 So I wanted to get a handle on kind of  
17 that carbon dioxide-to-water ratio versus an  
18 air-to-water ration in an air stripper.

19 Q And is that -- the fifth bullet you  
20 have --

21 A Right.

22 Q -- on this list is about the  
23 recarbonation basin.

24 A Correct.

25 Q Is that the notes you have in reference



1 to your questions about recarbonation basin?

2 A That was helpful information he  
3 provided.

4 Q Have you ever seen a recarbonation  
5 basin --

6 A Oh, yes.

7 Q -- basin at a water treatment plant?

8 A Yes. Many.

9 Q And where was that?

10 A Oh. Of the 30 some water treatment  
11 plants I visited on many -- well, Norman, for  
12 sure. I'd have to go back through my memory bank  
13 to remember the other ones. But it's a common  
14 process. You add --

15 MS. BAUGHMAN: Just -- just she asked  
16 where.

17 THE WITNESS: Yeah. Yeah. It's a  
18 common process.

19 Q (BY MS. HORAN) You said you've been to  
20 roughly 30 water treatment plants?

21 A Around that. I -- yes.

22 Q Was that in your capacity as a professor  
23 at the University of Oklahoma in your  
24 professional --

25 A Yes.

1           Q     Other than to talk about the  
2     recarbonation basin, did you have any other  
3     purpose in talking to Mr. Mattingly?

4           A     Yes.

5           Q     And what were those?

6           A     General operating conditions for basins  
7     at the treatment plant. But that was not guiding  
8     me so much for Camp Lejeune. That was just more  
9     general background information.

10          Q     And what, to the best of your memory,  
11     did you ask him?

12          A     I asked about operation of the raw  
13     water, clear well, and water tower basins.

14          Q     And what did he tell you?

15          A     Just what's on the document.

16          Q     And that's bullet number 2 on your  
17     notes?

18          A     Yes.

19          Q     And that reads "Asked about water" --  
20     strike that.

21                 The notes -- the second bullet reads,  
22     "Asked about raw water, clear well, and water  
23     towers-confirmed that they are all enclosed; not  
24     open at the top with no forced air exchange."

25                 Did I read that correctly?

1           A     Correct.

2           Q     What did you mean when you wrote "no  
3 forced air exchange"?

4           A     They were vented, but there was not  
5 forced air going through the -- the vessels.

6           Q     And when you say "forced air", you mean  
7 there was no fan or something like that?

8           A     Correct.

9           Q     But you did understand that they were  
10 vented.

11          A     Yes.

12          Q     What made you believe that the  
13 information you received from Mr. Mattingly would  
14 be applicable to Camp Lejeune?

15          A     To get a handle on the recarbonation  
16 basin as a contrast to Hennet's suggestion that  
17 it was analogous to an air stripper.

18          Q     And why did you believe that what Chris  
19 Mattingly had to say about a recarbonation would  
20 be applicable to that at Camp Lejeune?

21          A     I didn't expect it would be directly  
22 applicable, but I expected it to be order of  
23 magnitude that it would -- where as an air  
24 stripper has a very high air-to-water ratio, this  
25 was much lower CO2-to-water ratio.

1           Q     And the water ratio that Mr. Mattingly  
2     told you about was 1 to 20 or less?

3           A     Right.

4           Q     Do you know if Mr. Mattingly has ever  
5     been to Camp Lejeune?

6           A     No. Not to my knowledge.

7           Q     Going back to your second bullet, why  
8     did you ask Chris Mattingly about whether the  
9     water towers were enclosed?

10          A     Just curious. To confirm my  
11     understanding.

12          Q     Your second bullet, going back to the no  
13     forced air exchange, you would agree that a lack  
14     of forced air exchange is consistent with tanks  
15     with regular changes in water levels?

16                MS. BAUGHMAN: Object to the form.

17                THE WITNESS: Say that again.

18          Q     (BY MS. HORAN) Sure.

19                You would agree that a lack of forced  
20     air exchange is consistent with tanks with  
21     regular changes in water levels?

22                MS. BAUGHMAN: Object to the form.

23                THE WITNESS: Ventilation allows the  
24     water level to go up and down without changing  
25     the pressure in the system.

1 Q (BY MS. HORAN) And you agree that  
2 vented tanks with regular change in water levels  
3 will experience air exchange without force?

4 MS. BAUGHMAN: Object to the form.

5 THE WITNESS: To a degree.

6 Q (BY MS. HORAN) What do you mean when  
7 you say "to a degree"?

8 A The -- there would be -- as the water  
9 level goes down, the air would enter to replace.  
10 As the water level goes up, the air would escape.  
11 But that's not complete exchange of the air.

12 Q You would agree that a lack of forced  
13 air exchange is consistent with a vented tank;  
14 correct?

15 MS. BAUGHMAN: Object to the form.

16 THE WITNESS: Say that again.

17 Q (BY MS. HORAN) A lack of forced air  
18 exchange is consistent with a vented tank.

19 MS. BAUGHMAN: Object to the form.

20 THE WITNESS: No, I would not.

21 Q (BY MS. HORAN) And why not?

22 A Repeat -- repeat it one more time.

23 Q Sure.

24 You would agree that a lack of forced  
25 air exchange is consistent with a tank being

1       vented.

2               A       No.

3               MS. BAUGHMAN:   Object to the form.

4               THE WITNESS:   To me, forced air exchange  
5       is what happens in an air stripper where you're  
6       intentionally sweeping air through the system  
7       continuously to encourage vent -- the  
8       volatilization.   And that's not what's happening  
9       when the water level goes up and down in a tank  
10      with venting.

11              Q       (BY MS. HORAN)   But you would agree that  
12      if a tank does not have forced air exchange, the  
13      air -- as the water levels go up and down, there  
14      has to be a way for the air to escape via --

15              A       Yes.

16              Q       -- a vent.

17              So you would agree that structurally, if  
18      there's no forced air exchange, then it would be  
19      consistent that the tank would have a vent.

20              MS. BAUGHMAN:   Object to the form

21              Q       (BY MS. HORAN)   Is that fair?

22              THE WITNESS:   No, I would not.

23              Forced air, to me, is you're -- you have  
24      some kind of a fan or pump or something that's  
25      forcing the air.   When the water level goes up

1 and down, that's just natural; that's not forced.  
2 I would not agree with the terminology "forced  
3 air exchange" to what happens as the water level  
4 goes up and down in a reservoir.

5 Q (BY MS. HORAN) Sure.

6 And when you have a reservoir where the  
7 water's going to go up and down in level, the air  
8 has to escape somehow.

9 A Correct.

10 Q And the way for it to escape would be  
11 through a vent.

12 Fair?

13 A Last part again.

14 Q The way for the water -- or strike that.

15 The way for the air to escape as the  
16 water levels are rising and dropping throughout  
17 time would be through a vent.

18 A Correct. But that's natural. That's  
19 not forced. It happens naturally as the water  
20 level goes up and down. There's no energy put  
21 into the system to force that to happen.

22 Q And the water -- strike that.

23 And the air going through the vent as  
24 the water level rises and drops is also natural.

25 A That's what I'm saying.

1 MS. BAUGHMAN: Object to the form.

2 Yeah.

3 THE REPORTER: I'm sorry. Repeat.

4 That's what I'm...

5 THE WITNESS: That's what I am saying

6 is, that's a natural. That's not a forced.

7 Q (BY MS. HORAN) Sure.

8 I think I might have already asked you  
9 this, but I can't remember. Have you been to  
10 Camp Lejeune?

11 A No.

12 Q So you wrote your rebuttal report  
13 without inspecting the Hadnot Point or Holcomb  
14 Boulevard water treatment systems.

15 Fair?

16 A In -- correct.

17 Q And you wrote your report without  
18 examining any of the reservoirs or water tanks at  
19 Camp Lejeune?

20 A Any of the...

21 Q Reservoirs or water tanks at Camp  
22 Lejeune.

23 A Correct.

24 Q And you've never inspected any of the  
25 spiractors at Camp Lejeune?



1           A     Correct.

2           Q     Have you ever personally inspected a  
3     water buffalo?

4           A     No.

5           Q     Have you ever seen a water buffalo in  
6     person?

7           A     I likely have on my visits to military  
8     bases to do the remediation research.

9           Q     As part of your work in this case, you  
10    have not --

11          A     No.

12          Q     -- personally inspected a water buffalo?

13                MS. BAUGHMAN: Try to wait until she  
14    finishes her whole question before you answer.

15                THE WITNESS: Thank you.

16                MS. BAUGHMAN: The court reporter has a  
17    hard --

18                THE WITNESS: Sorry.

19                MS. BAUGHMAN: -- time. Okay.

20          Q     (BY MS. HORAN) Do you have any memory  
21    of ever observing the filling of a water buffalo  
22    at any of the military bases where you may have  
23    seen one?

24          A     No.

25          Q     Prior to submitting your rebuttal

1 report, had you ever taken any actions to visit  
2 Camp Lejeune?

3 MS. BAUGHMAN: Object to the form.

4 THE WITNESS: Say that again.

5 Q (BY MS. HORAN) Sure.

6 Prior to submitting your rebuttal  
7 report, had you ever taken any actions or asked  
8 to visit Camp Lejeune?

9 A No.

10 Q So you did not think it was important to  
11 go to Camp Lejeune in order to offer your  
12 opinions in your rebuttal report.

13 Fair?

14 MS. BAUGHMAN: Object to the form.

15 THE WITNESS: I had the information at  
16 hand that I needed.

17 Q (BY MS. HORAN) Sitting here today, do  
18 you want to visit Camp Lejeune?

19 A Say that again.

20 Q Sitting here today, do you want to visit  
21 Camp Lejeune?

22 A Want to or need to?

23 Q We'll start with want and then we can go  
24 to need.

25 A I always like to tour water treatment

1 plants. I don't need to.

2 Q You don't need to.

3 So there's no need for you to visit Camp  
4 Lejeune for the opinions that you've offered in  
5 this case?

6 MS. BAUGHMAN: Object to the form.

7 THE WITNESS: The only reason I would  
8 want to is in response to Hennet's visit in  
9 February.

10 Q (BY MS. HORAN) And what about Dr.  
11 Hennet's visit in February would make you want to  
12 go to Camp Lejeune?

13 A Because he was rebutting my rebuttal  
14 through his visit. And so while I didn't need --  
15 I had all the information I needed in the AH  
16 documents to do my calculations. Given that he  
17 went on a rebuttal to my rebuttal trip, it would  
18 be nice to have the same opportunity.

19 Q And what information do you hope to gain  
20 from that visit that you don't have today?

21 MS. BAUGHMAN: Object to the form.

22 THE WITNESS: We don't really know  
23 exactly what Hennet did and who he talked to and  
24 what he saw. So it would be just to have that  
25 same background information that he had.

1 Q (BY MS. HORAN) Did anything from that  
2 Dr. -- or strike that.

3 You attended Dr. Hennet's deposition;  
4 correct? And you've read it?

5 A Right. Correct.

6 Q And you've received the photos that Dr.  
7 Hennet took at that visit; correct?

8 A Correct.

9 Q And you've reviewed the photos of his  
10 measurements that he took at Camp Lejeune?

11 A Correct. To my knowledge. Correct.

12 Q And so if I'm -- what, for your  
13 calculations information, would you seek to get  
14 at Camp Lejeune if you were to visit?

15 MS. BAUGHMAN: Object to the form.

16 THE WITNESS: Say that again.

17 Q (BY MS. HORAN) What -- for your  
18 calculations and opinions, what specific  
19 information would you seek to get from the visit  
20 at Camp Lejeune?

21 MS. BAUGHMAN: Object to the form.

22 THE WITNESS: My calculations were based  
23 upon AH's extensive study and I felt that I had  
24 all the information I needed. Nothing that I  
25 have seen -- I -- I really don't know what Hennet

1 -- there wasn't report associated with his visit  
2 so I don't know what all he did or what all it  
3 meant. So I don't really anticipate -- I don't  
4 see that there would be any changes -- I don't --  
5 I'm confident in my calculations as they stand  
6 today.

7 Q (BY MS. HORAN) Your water treatment  
8 plant opinions are related to Hadnot Point and  
9 Tarawa Terrace.

10 Fair?

11 A Say again.

12 Q Your water treatment plant opinions are  
13 related to Hadnot Point and Tarawa Terrace.

14 Fair?

15 A Yes. Correct.

16 Q And you agree that the water going  
17 through the water treatment plant at Holcomb  
18 Boulevard was not contaminated with VOCs; right?

19 MS. BAUGHMAN: Object to the form.

20 During what timeframe?

21 MS. HORAN: Ever.

22 THE WITNESS: Yeah, it's --

23 Laura, I -- please stick to form and  
24 foundation.

25 THE WITNESS: To the -- all the

1 information I've seen suggests that's true.  
2 That's correct. Through the water treatment  
3 plant.

4 Q (BY MS. HORAN) Yes. That was the  
5 question.

6 A That's just different than the  
7 distribution system.

8 Q Yes. The question was just related to  
9 the water treatment plant.

10 A Just wanted to clarify that.

11 Q Yep.

12 And you agree that the wells that  
13 supplied water to the water treatment plant at  
14 Holcomb Boulevard were never determined to be  
15 contaminated with VOCs.

16 MS. BAUGHMAN: Objection. Form and  
17 foundation.

18 THE WITNESS: That's outside the scope  
19 of my report.

20 Q (BY MS. HORAN) So you have no opinion  
21 on that sitting here today?

22 A I'd have to review the documents to --  
23 to make a statement on that.

24 Q I'm about to switch topics. Are you  
25 still good or do you want to take a little break?

1           A     We can go a little bit longer.

2           Q     Okay.

3                     Your report uses Coke bottles to show  
4     how Henry's Law works.

5                     Do you recall that?

6           A     Yes.  It's a common teaching method I  
7     use when I talk about volatilization in air  
8     stripping.

9           Q     So you use the Coke analogy as a teacher  
10    as well?

11          A     Students 20 years later remember it.

12          Q     And the general premise is that the Coke  
13    and the head space in the Coke bottle reach an  
14    equilibrium of carbon dioxide which is different  
15    than that found outside the bottle because of the  
16    bottle barrier between the inside of the bottle  
17    and the outside of the bottle.

18          A     Correct.

19          Q     And if you leave the cap off the Coke,  
20    the CO<sub>2</sub> will reach equilibrium with the ambient  
21    air and go flat; correct?

22          A     Correct.

23          Q     And the reason that a flat Coke doesn't  
24    fizz is that the ratio of concentration of carbon  
25    dioxide left in the Coke to the concentration of

1 the carbon dioxide in the ambient air is equal to  
2 Henry's constant for carbon dioxide.

3 Fair?

4 A That's -- that equilibrium is achieved.  
5 Correct.

6 Q The cap of a Coke is similar to a vent  
7 in that if you cut a vent into the side of the  
8 bottle, it'll have the same effect as taking the  
9 cap off.

10 MS. BAUGHMAN: Object to the form.

11 Q (BY MS. HORAN) Is that fair?

12 MS. BAUGHMAN: Object to the form.

13 THE WITNESS: Say that again.

14 Q (BY MS. HORAN) Sure.

15 If you cut a vent in the side of a Coke  
16 bottle, it would have the same impact as taking  
17 the cap off.

18 MS. BAUGHMAN: Object to the form.

19 THE WITNESS: I disagree.

20 Q (BY MS. HORAN) And why is that?

21 A Has to do with the area. So if you put  
22 a small hole in the Coke bottle, that's different  
23 than taking the cap off.

24 Q Sure.

25 But CO2 would still go through the small



1 hole or vent. Is that fair?

2 A To a lesser degree. Much lesser degree.

3 And part of the -- part of the breakdown  
4 -- well, part of -- the pressure of the CO2 in  
5 that head space is different from the VOC levels  
6 in the area that we're talking about.

7 Q Even with a small hole in a Coke bottle,  
8 over time, will it eventually reach equilibrium  
9 with the ambient air outside the bottle?

10 A Over an extended time.

11 Q And most people have probably  
12 experienced that before when they've picked up a  
13 can of Coke and it was flat.

14 Fair?

15 MS. BAUGHMAN: Object to the form.

16 THE WITNESS: I guess there's that rare  
17 occasion.

18 Q (BY MS. HORAN) How much time does it  
19 take for a Coke with a vent -- or strike that.

20 How much time would it take for a Coke  
21 with the cap off to equilibrate and go flat?

22 A I -- I couldn't say.

23 Q And I think I understand this, but your  
24 opinion is that it would be a shorter amount of  
25 time than if it was just a pinhole in the side of

1 the Coke bottle.

2 A Yes.

3 Q And if you had something in between a  
4 pinhole and the whole cap off, that would fall  
5 somewhere in between on the timeframe of how long  
6 it would take to equilibrate.

7 MS. BAUGHMAN: Object to the form.

8 THE WITNESS: In general, I would agree.

9 Q (BY MS. HORAN) Another example you use  
10 in your report is heat flow wherein heat flow is  
11 lost from the home in proportion to the  
12 temperature difference between the inside and  
13 outside the home surface area and the insulation  
14 in the home.

15 Do you remember that?

16 A Yes.

17 Q And the heat is lost due to diffusion?

18 A Yes.

19 Q And the water equivalent of this would  
20 be a sealed bucket wherein the water is warmer  
21 than the outside air?

22 MS. BAUGHMAN: Object to the form.

23 THE WITNESS: Say that again.

24 Q (BY MS. HORAN) The water equivalent to  
25 the home example you have in your report would be

1 a sealed bucket wherein the water is warmer than  
2 the outside air.

3 MS. BAUGHMAN: Object to the form.

4 THE WITNESS: In general. Yes.

5 Q (BY MS. HORAN) Would you agree that in  
6 a sealed bucket wherein the water is warmer than  
7 the outside air, if the water was being mixed in  
8 the bucket, then the heat loss is not fully  
9 diffusion controlled?

10 MS. BAUGHMAN: Object to the form.

11 THE WITNESS: Say that again.

12 Q (BY MS. HORAN) Sure.

13 Would you agree that in a sealed bucket  
14 wherein the water is warmer than the outside air,  
15 if the water is being mixed in the bucket, then  
16 the heat loss is not fully diffusion controlled?

17 MS. BAUGHMAN: Object to the form.

18 THE WITNESS: This is all very  
19 speculative. Depends upon lots of factors.

20 Q (BY MS. HORAN) What are the factors?

21 A I'd need to know more about the  
22 situation you're describing.

23 Q What would you need to know?

24 A Well, explain to me further the bucket.  
25 Is it full of water? Is it water and air? Is --

1 I need to know more details.

2 Q So you would need to know the amount of  
3 water in the bucket?

4 A The amount and the -- I'd just need to  
5 know the whole system. I'd have to have a  
6 schematic of volume of water, volume of air, what  
7 kind of mixing, et cetera.

8 Q So if it's a -- if everything is  
9 controlled -- so it has the same amount of water  
10 in it and the only difference is that it's being  
11 mixed, would you then agree that the heat loss is  
12 not fully diffusion controlled?

13 MS. BAUGHMAN: Object to the form.

14 THE WITNESS: Ultimately, it's  
15 diffusion. Mixing -- well, ultimately, it's  
16 diffusion.

17 Q (BY MS. HORAN) Is there anything --  
18 agree that it would be faster when mixing?

19 MS. BAUGHMAN: Object to the form.

20 THE WITNESS: Say again.

21 Q (BY MS. HORAN) Would you agree that the  
22 diffusion would be faster when the water is being  
23 mixed?

24 A I wouldn't agree that diffusion would be  
25 faster. Diffusion's a molecular property.

1           Q     Do you agree that the loss of heat would  
2     be faster when the water is being mixed?

3           MS. BAUGHMAN:   Object to the form.

4           THE WITNESS:    It all -- it's all  
5     speculative.   I can envision cases where it would  
6     be and maybe other cases where -- I mean if it's  
7     uniform temperature throughout, then mixing would  
8     have little limited impact.

9           Q     (BY MS. HORAN)   And when you say  
10    "uniform throughout", are you talking about the  
11    water in the bucket or are you talking about the  
12    temperature outside?

13          A     Water in the bucket.   Well, both  
14    actually.

15          Q     Okay.   So you do not agree that if the  
16    water in the bucket's being mixed, then the heat  
17    loss would be faster than if the water was  
18    stationary.

19          MS. BAUGHMAN:   Object to the form.

20          THE WITNESS:    I'd have to know the  
21    situation again.   But diffusion is -- would be  
22    independent -- the diffusion process itself would  
23    be independent of the mixing.

24          Q     (BY MS. HORAN)   The rate of  
25    diffusion-controlled volatilization losses for

1 immobile water body does not apply to flowing  
2 mixing water; correct?

3 MS. BAUGHMAN: Object to the form.

4 THE WITNESS: Say that again.

5 Q (BY MS. HORAN) The rate of  
6 diffusion-controlled volatilization losses for  
7 immobile water body does not apply to flowing or  
8 mixing water; correct?

9 MS. BAUGHMAN: Object to the form.

10 THE WITNESS: One more time.

11 Q (BY MS. HORAN) The rate of  
12 diffusion-controlled volatilization losses for  
13 immobile water body --

14 A Immobile...

15 Q An immobile water body does not apply to  
16 flowing or mixing water; correct?

17 MS. BAUGHMAN: Object to the form.

18 THE WITNESS: For an im- -- I'm trying  
19 to parse the nuances of the question. For --

20 MS. BAUGHMAN: I'm going to object to  
21 the form.

22 THE WITNESS: One more time.

23 MS. BAUGHMAN: If you don't understand,  
24 you can tell her that.

25 THE WITNESS: Yeah. It's -- well,

1       there's nuances in the question.

2           Q       (BY MS. HORAN)   What are the nuances in  
3       the question that are --

4           A       Clarify -- read it one more time.

5           Q       Sure.

6                   The rate of diffusion-controlled  
7       volatilization losses for immobile water body  
8       does not apply to flowing mixing water; correct?

9           A       Immobile water body --

10          Q       Uh-huh.

11                   MS. BAUGHMAN:   Mobile or immobile?

12          Q       (BY MS. HORAN)   Immobile.

13          A       Im- -- okay.   Immobile.

14                   I'd have to disagree.

15          Q       So it's your opinion that the rate of  
16       diffusion-controlled volatilization losses would  
17       be the same for both immobile water bodies and  
18       flowing or mixing water.

19                   MS. BAUGHMAN:   Object to the form.

20                   THE WITNESS:   Same two-film transfer  
21       concept applies in both cases.   There are --  
22       there are other nuances.

23          Q       (BY MS. HORAN)   And the rate would be  
24       the same for both immobile water bodies and  
25       flowing mixing water?

1 MS. BAUGHMAN: Object to the form.

2 THE WITNESS: What do you mean by  
3 "rate"?

4 Q (BY MS. HORAN) The rate of  
5 diffusion-controlled volatilization losses would  
6 be the same for both immobile water bodies and  
7 flowing, mixing water.

8 Is that your opinion?

9 MS. BAUGHMAN: Same objection.

10 THE WITNESS: That's a very broad  
11 question. It all comes down to interfacial area  
12 and so that's what it's a function of. So I  
13 mean, if you're talking about a lake versus a  
14 stream -- is that what you're getting at?

15 Q (BY MS. HORAN) I'm just asking about  
16 the -- the baseline principle.

17 MS. BAUGHMAN: Object to the form.

18 THE WITNESS: I'd have to have more  
19 details to answer the question.

20 Q (BY MS. HORAN) If the water mixes,  
21 would it increase the facial area?

22 MS. BAUGHMAN: Object to the form.

23 THE WITNESS: Depends upon what you mean  
24 by mixing. If it's splashing, then that could  
25 have an increase on the area. It depends.



1           Q     (BY MS. HORAN)   What if there -- or  
2     strike that.

3                     You describe a two-film mass transfer  
4     process in your report on Page 5.   This is  
5     Exhibit 2.

6                     Do you see what you've marked as  
7     equation 3-3?

8           A     Yes.

9           Q     Would this equation 3-3 apply to the  
10    rate of volatilization losses for a body of water  
11    with mixing?

12          A     Yes.

13          Q     Would it, in your opinion, accurately  
14    predict, or over predict, or under predict the  
15    rate of volatilization losses for a body of water  
16    with mixing?

17                     MS. BAUGHMAN:   Object to the form.

18                     THE WITNESS:    If you quantify all the  
19    parameters correctly, it would be accurate.

20          Q     (BY MS. HORAN)   If you had a bucket of  
21    water with TCE dissolved into it and you didn't  
22    mix it, is it your opinion that the losses would  
23    be diffusion controlled?

24                     MS. BAUGHMAN:   Object to the form.

25                     THE WITNESS:    Bucket of water with TCE

1 in it.

2 Q (BY MS. HORAN) Uh-huh. But you're not  
3 mixing it.

4 A No mixing. Well, it would be diffusion  
5 and film transfer.

6 Q Diffusion and film transfer would be the  
7 two processes that would control the losses?

8 A Correct.

9 Q And assuming you have a spinning  
10 propeller in the bottom of that, that mix the  
11 water around, would volatilization be increased?

12 A Would it be...

13 Q Increased.

14 MS. BAUGHMAN: Object to the form.

15 THE WITNESS: It could be.

16 Q (BY MS. HORAN) And when you say it  
17 could be, what would be the factors that would  
18 increase it?

19 A If the mixing keeps the concentration  
20 more uniform throughout the system, then it would  
21 help reduce diffusion limitations.

22 Q Anything else?

23 A (Shakes head.)

24 Q Do you know how much water enters the  
25 reservoir at Camp Lejeune per day?

1 MS. BAUGHMAN: Object to the form.

2 THE WITNESS: It's in the report.

3 Q (BY MS. HORAN) Oh. Where was that?

4 A How much water enters the...

5 Q Reservoir at Camp Lejeune per day.

6 MS. BAUGHMAN: Object to the form.

7 THE WITNESS: Yeah. That's all  
8 documented in the AH -- the water treatment. And  
9 they have the -- that's information that's in the  
10 report.

11 Q In your expert report --

12 A No.

13 Q -- or in the AH Environmental?

14 A AH Environmental.

15 Q Okay. And you relied upon what AH  
16 Environmental put in their report about that?

17 A Correct.

18 Q And is it your understanding that AH  
19 Environmental also says how much water exits the  
20 reservoir at Camp Lejeune per day?

21 A Say again. That...

22 Q That the AH Environmental report also  
23 says how much water exits the reservoir at Camp  
24 Lejeune per day.

25 MS. BAUGHMAN: Objection to form.

1           THE WITNESS: Specifically, that's --  
2       what goes in comes out.

3           Q     (BY MS. HORAN) Can you describe the  
4       process for how water moves through the Camp  
5       Lejeune water treatment plant?

6           MS. BAUGHMAN: Object to the form.

7           THE WITNESS: Described in the  
8       schematics.

9           Q     (BY MS. HORAN) Which schematic are you  
10      referencing?

11          A     For example, 3-1 in my report. Page 3.

12          Q     So you agree that the water goes through  
13      the raw water reservoir, into the spiractors,  
14      into the recarbonation basin, through the gravity  
15      filters, and then into the finished water  
16      reservoir?

17          MS. BAUGHMAN: Object to the form.

18          THE WITNESS: Correct.

19          Q     (BY MS. HORAN) And that's for the  
20      Hadnot Point --

21          A     Right.

22          Q     -- water treatment plant; correct?

23          A     And the next figure's for -- and these  
24      are just from -- well, from AH. And I believe  
25      Hennet had these in his as well.

1           Q     Do you agree that the reservoir mixes  
2     water?

3           MS. BAUGHMAN:   Object to the form.

4           THE WITNESS:   Say again.

5           Q     (BY MS. HORAN)   The reservoir mixes  
6     water.

7           MS. BAUGHMAN:   Object to the form.

8           THE WITNESS:   No.

9           Q     (BY MS. HORAN)   And what's your basis  
10    for not agreeing that the reservoir mixes water?

11          MS. BAUGHMAN:   Object to the form.

12          THE WITNESS:   Well, when you say "mixes  
13    water," I mean, in a water treatment plant,  
14    mixing has a propeller that man- -- forcefully  
15    mixes the water.

16          Q     (BY MS. HORAN)   And it's your  
17    understanding that Camp Lejeune does not  
18    forcefully mix water in the reservoirs?

19          A     That's my understanding.

20          Q     And you would agree that there are VOC  
21    losses at the spiractors at Camp Lejeune;  
22    correct?

23          MS. BAUGHMAN:   Object to the form.

24          THE WITNESS:   Calculations indicate as  
25    much.

1 Q (BY MS. HORAN) And you would agree that  
2 there are VOC losses at the sand filters at Camp  
3 Lejeune?

4 MS. BAUGHMAN: Object to the form.

5 THE WITNESS: I'm sorry. At the...

6 Q (BY MS. HORAN) The sand filters.

7 MS. BAUGHMAN: Object to the form.

8 THE WITNESS: I deem that to be  
9 negligible, as did Hennet.

10 Q (BY MS. HORAN) So yes, but a small  
11 amount? Or --

12 MS. BAUGHMAN: Object to the form.

13 Q (BY MS. HORAN) -- what do you mean when  
14 you say "negligible"?

15 A As possibility, but it's very minor.  
16 Negligible.

17 Q Would you agree that there are VOCs lost  
18 in the treated water reservoirs?

19 MS. BAUGHMAN: Object to the form.

20 THE WITNESS: Possibility, but likely  
21 very minor.

22 Q (BY MS. HORAN) Would you agree that  
23 there are VOC losses in the water towers?

24 MS. BAUGHMAN: Object to the form.

25 THE WITNESS: Possibly, but very minor.

1 Q (BY MS. HORAN) And when you say  
2 "possibly," what -- what do you mean?

3 A Any -- it's certainly possible that  
4 there might be some minor losses.

5 Q Would you mind if we take a break at  
6 this point?

7 A Sure.

8 Q Thank you.

9 THE VIDEOGRAPHER: We're off the record  
10 at 10:47 a.m.

11 (Short break from 10:47 a.m. to 11:00 a.m.)

12 THE VIDEOGRAPHER: We're back on the  
13 record at 11:00 a.m.

14 Q (BY MS. HORAN) Welcome back, Dr.  
15 Sabatini.

16 A Thank you.

17 Q You understand you're still under oath?  
18 You're still under oath.

19 A Thank you. Yes. Understood.

20 Q Right before the break --

21 A And is now a good time to --

22 MS. BAUGHMAN: No. You -- no. Just  
23 answer her questions.

24 THE WITNESS: Okay.

25 Q (BY MS. HORAN) Right before the break,

1     you said -- or I think I understood. I had asked  
2     you if you would agree that the reservoir mixes  
3     water, and you had referenced a mechanical  
4     mixing.

5             Do you recall that?

6             A     When you -- when you -- yes, I do.

7             Q     Okay. The water reservoirs at Camp  
8     Lejeune, setting aside mechanical mixing, would  
9     organically mix; correct?

10            MS. BAUGHMAN: Object to the form.

11            THE WITNESS: Depends upon what you mean  
12     by "organically mix."

13            Q     (BY MS. HORAN) Sure.

14            So as water is drawn into the reservoir,  
15     it will -- the flow rates and the -- or the  
16     changes in flow rates in the diffusion will move  
17     the water around in the reservoir; correct?

18            MS. BAUGHMAN: Object to the form.

19            THE WITNESS: To a certain degree.

20            Q     (BY MS. HORAN) And when water is pulled  
21     out of the raw water reservoirs, or any of  
22     reservoirs, it will again mix the water in the  
23     reservoir; correct?

24            MS. BAUGHMAN: Object to the form.

25            THE WITNESS: To a very limited degree.



1           Q     (BY MS. HORAN)   And why would that be  
2     limited?

3           A     Because when we talk about reactor  
4     design, there's a well-mix system where you have  
5     widespread mixing.   What you're describing would  
6     be more minor, localized mixing.

7           Q     Would it mix throughout the entire water  
8     reservoir?   Or when you say limited local, what  
9     did you mean?

10           MS. BAUGHMAN:   Object to the form.

11           THE WITNESS:   My vision would be if the  
12     water enters, there might be a little bit of  
13     mixing right there.   But that wouldn't  
14     necessarily mix throughout the basin.   It would  
15     be localized to the inlet.

16           Q     (BY MS. HORAN)   And is the same -- your  
17     understanding or opinion the same for where water  
18     is drawn out of the reservoir?

19           MS. BAUGHMAN:   Object to the form.

20           THE WITNESS:   To a lesser degree even.  
21     That would be less even than at the inlet.  
22     Typically, it's flowing out by gravity.

23           Q     (BY MS. HORAN)   And as that gravity  
24     pulls the water out, would it mix around the  
25     reservoir?

1 MS. BAUGHMAN: Object to the form.

2 THE WITNESS: To a much lesser degree.

3 Q (BY MS. HORAN) Other than the expert  
4 reports produced in this case and the AH  
5 Environmental report, do you recall relying on  
6 any other sources to learn about the structure of  
7 the water treatment plants at Tarawa Terrace or  
8 Hadnot Point?

9 MS. BAUGHMAN: Object to the form.

10 THE WITNESS: And you mentioned -- the  
11 two you mentioned were...

12 Q (BY MS. HORAN) Other expert reports or  
13 the AH Environmental report.

14 MS. BAUGHMAN: Object to the form.

15 THE WITNESS: There were some CLWs that  
16 provided some information.

17 Q (BY MS. HORAN) And what -- could you  
18 describe what those documents either were or what  
19 information was contained in them, to the best of  
20 your recollection?

21 MS. BAUGHMAN: Object to the form.

22 THE WITNESS: Oh, I'd have to go back  
23 and review my notes. But well, some of it, I  
24 guess, is in my report in terms of the  
25 concentrations, pre-treatment and post-treatment

1 plant. Some of that was from the CLW. There was  
2 information on water level variations in a  
3 reservoir that was a CLW.

4 Q (BY MS. HORAN) So prior to submitting  
5 your expert report, it was your understanding  
6 that the water levels in the water reservoirs  
7 would fluctuate?

8 A Yes.

9 MS. BAUGHMAN: Object to the form.

10 THE WITNESS: Yes, I recognize there  
11 would be some up and down.

12 Q (BY MS. HORAN) Do you recall if you  
13 ever looked at any building schematics for the  
14 water treatment plants?

15 A Building schematics meaning?

16 Q You're an engineer so I think I'll defer  
17 to you on what you would consider a --

18 A Well, I --

19 Q -- building schematic.

20 A Well, I looked at some schematics for  
21 unit processes in the -- in the treatment system.  
22 I didn't look at schematics for the fit building  
23 that the processes were in.

24 Q Do you recall looking at any design  
25 plans?

1           A     In -- in -- in general, I do. Yes. I  
2     think even in -- seems like there's one  
3     description of updating the plant.

4           Q     Other than updating the plant, do you  
5     recall viewing any other design plans for the  
6     water treatment plants --

7                     MS. BAUGHMAN: Object to the form.

8           Q     (BY MS. HORAN) -- at Camp Lejeune?

9           A     I'd have to go back and look through my  
10    notes.

11          Q     Could you turn to Page 3 of your report  
12    which is Exhibit 2?

13          A     (Witness complies.)

14          Q     Figure 3-1 we already talked about, but  
15    that's the Hadnot Point water treatment plant  
16    schematic.

17          A     Yes.

18          Q     In the paragraph above, you say, "Not  
19    shown in Figure 3-1 is the 300,000 gallon water  
20    tower filled from the finished water reservoir."

21                     Do you see that?

22          A     Yes.

23          Q     And what source did you rely upon in  
24    reaching the conclusion that there was only one  
25    water tower at Hadnot Point?

1 MS. BAUGHMAN: Object to the form.

2 THE WITNESS: The AH Environmental.

3 Q (BY MS. HORAN) Sitting here, anything  
4 besides the AH Environmental?

5 A Say again.

6 Q Sitting here today, do you recall  
7 relying on anything other than the AH --

8 A No.

9 Q -- Environmental for that proposition?

10 A No.

11 Q Okay. When you reviewed Dr. Hennet's  
12 report, did you review the underlying documents  
13 that he relied upon as well?

14 MS. BAUGHMAN: Object to the form.

15 THE WITNESS: There were -- yes. Well,  
16 I specifically remember several documents.

17 (Government Exhibit 5 marked for identification)

18 MS. HORAN: I'm handing to the witness a  
19 document that I'll mark as Government Exhibit 5,  
20 and it's Bates number  
21 CLJA\_watermodeling\_07-0000003171, and it runs  
22 through the Bates ending in 3184.

23 Q (BY MS. HORAN) Dr. Sabatini, I'll give  
24 you a minute to -- to page through it. But have  
25 you seen this document before?

1           A     Parts of it look familiar.  Parts of it  
2 look familiar.

3           Q     You see the first page, the Bates ending  
4 in 171, says, "Hadnot Point Building Number 20 --

5           A     Yes.

6           Q     -- capacity 5MGD.  With 40 deep wells  
7 lime softening plant."

8                     Do you see that?

9           A     Yes.

10          Q     Do you have any reason to doubt that  
11 this is an accurate schematic of the Hadnot Point  
12 Water Treatment Plant?

13                     MS. BAUGHMAN:  Objection.  Form and  
14 foundation.

15                     THE WITNESS:  I have no idea where this  
16 came from.  So I'm -- it's hard for me to comment  
17 on -- on -- ask the question again.

18          Q     (BY MS. HORAN)  Sure.

19                     I was just wondering if you had any  
20 reason to doubt its accuracy having looked at it.

21                     MS. BAUGHMAN:  Objection.  Form and  
22 foundation.

23                     THE WITNESS:  Not knowing where it came  
24 from, I'd have to know more details to...

25          Q     (BY MS. HORAN)  Do you see on the first

1 page there are five spiractors?

2 A Yes.

3 Q And do you see that there are five sand  
4 filters?

5 A Yes.

6 Q And those numbers align with the numbers  
7 included in Figure 3-1 of your report. And  
8 you're -- I'm happy to let you look through your  
9 report as well.

10 A Yes.

11 MS. BAUGHMAN: Object to the form.

12 THE WITNESS: Yes.

13 Q (BY MS. HORAN) Do you see that document  
14 -- or Exhibit 5 has four elevated water storage  
15 tanks?

16 A Yes.

17 Q Do you know how many elevated water  
18 storage tanks Hadnot Point water distribution had  
19 throughout time?

20 A I relied upon the AH Environmental.

21 Q You can set Exhibit 5 aside.

22 A (Witness complies.)

23 Q The Hadnot Point Water Treatment Plant  
24 has an 800,000 water -- raw water reservoir.

25 Do you agree?

1           A     That's my understanding.

2           Q     And you agree that that reservoir is  
3     vented?

4           A     That would be the normal course.   Yes.

5                 MS. HORAN:   I'm handing the witness what  
6     I'll mark as Exhibit 6.   And this has Bates  
7     number Hennet\_USA\_0000000010.   And Bates ending  
8     in 25, 30, and 31.

9     (Government Exhibit 6 marked for identification)

10          Q     (BY MS. HORAN)   Dr. Sabatini, have you  
11     seen these images before?

12                 MS. BAUGHMAN:   Objection.   Form and  
13     foundation.

14                 THE WITNESS:   I'm -- they look similar  
15     to something I've seen before.

16          Q     (BY MS. HORAN)   Could you turn to the  
17     Bates ending in 31?

18                 MS. BAUGHMAN:   Object to the form.

19                 Counsel, to the extent these are the  
20     pictures that Dr. Hennet took in February 2005  
21     [sic] --

22                 THE WITNESS:   '25.

23                 MS. BAUGHMAN:   -- we've got a pending  
24     motion to exclude those from the case.   So I'll  
25     let you ask limited questions with the



1 understanding that we may -- I would like the  
2 court reporter to note that this may be separated  
3 -- I would like it to be separated and marked  
4 because we're going to move to exclude testimony  
5 about this assuming our -- our motion is granted.  
6 If our motion is granted.

7 Go ahead.

8 MS. HORAN: Sure.

9 MS. BAUGHMAN: Because we don't know the  
10 foundation of this. Dr. Hennes was'n't asked  
11 questions about these. There's no report about  
12 them.

13 MS. O'LEARY: Objections are limited to  
14 form and foundation.

15 MS. BAUGHMAN: I understand.

16 MS. O'LEARY: We just said --

17 MS. BAUGHMAN: Not if -- not if it has  
18 to do with a motion pending before the court.  
19 I'm allowed to explain the basis of that motion.

20 And by the way, you're not the lawyer.  
21 She's the one who's supposed to be speaking here.  
22 One lawyer.

23 Please mark this because we're going to  
24 move to exclude testimony about this -- about  
25 this exhibit.

1           Go ahead.

2           MS. HORAN:   Okay.   Are you done?

3           MS. BAUGHMAN:   Done.

4           MS. HORAN:   Okay.

5           Q    (BY MS. HORAN)   Could you please turn to  
6   the one ending in 31?   Do you see that?   Okay.

7           Do you see there are two vents in this  
8   image?

9           MS. BAUGHMAN:   Objection.   Form and  
10   foundation.

11          THE WITNESS:   Yes.

12          Q    (BY MS. HORAN)   Are those vents that  
13   you've seen similar to other vents you've seen on  
14   the top of a water reservoir?

15          A    In general, yes.

16          Q    And then could you turn to the Bates  
17   ending in 30?

18          A    Which one?   30?

19          Q    Yeah.

20          A    (Witness complies.)

21          Q    And do you see a vent in the image?

22          A    Yes.

23          Q    And is that vent similar to the vents  
24   you would have seen or expect to see on top of a  
25   water reservoir?

1 A Same. In general, yes.

2 Q Could you turn to Image 10 which is the  
3 first page.

4 A Number -- which number?

5 Q 10. It's the first page.

6 A 10.

7 Q Yeah.

8 And do you see a picture of a vent?

9 A Yes.

10 MS. BAUGHMAN: Objection. Form and  
11 foundation.

12 Q (BY MS. HORAN) And is this a vent the  
13 type you would expect to see on top of a water  
14 treatment reservoir?

15 MS. BAUGHMAN: Same objections.

16 THE WITNESS: At times.

17 Q (BY MS. HORAN) And you can see some  
18 measurements for the -- along the right side of  
19 it. Fair?

20 MS. BAUGHMAN: Objection. Form and  
21 foundation.

22 Q (BY MS. HORAN) Do you see that?

23 A Yes.

24 Q Is that the size and shape that you  
25 would expect to see of a vent atop a water

1 treatment reservoir?

2 A It varies, but not atypical.

3 Q And then could you turn to Page 25 which  
4 is the second page in the document?

5 A (Witness complies.)

6 Q Is this also the -- or do you see a vent  
7 in the image?

8 MS. BAUGHMAN: Objection. Form and  
9 foundation.

10 THE WITNESS: This one's a lot less  
11 clear. What it's showing.

12 Q (BY MS. HORAN) And why is this one less  
13 clear what it's showing?

14 MS. BAUGHMAN: Same objections.

15 THE WITNESS: The others all seem to be  
16 -- this one seems to...

17 Q (BY MS. HORAN) Ah. So is this just a  
18 different shaped vent?

19 MS. BAUGHMAN: Objection. Form and  
20 foundation.

21 Q (BY MS. HORAN) Is that what you're  
22 referencing?

23 A I'm not sure what this one is.

24 Q Have you ever seen a vent that looks  
25 like the vent in Image 25?

1           A     I'm not sure what this is.

2           Q     Do you know one way or the other whether  
3 this looks like a vent?

4           MS. BAUGHMAN:  Objection to form.

5           THE WITNESS:  I'd need to -- I'd need to  
6 know more to comment on this one.

7           Q     (BY MS. HORAN)  What would you need to  
8 know, Dr. Sabatini?

9           A     Where is it?  What is it?  What's it's  
10 purpose?

11          Q     Does this structure in Image 25 look  
12 like something that could vent a water treatment  
13 reservoir?

14          MS. BAUGHMAN:  Objection.  Form and  
15 foundation.

16          THE WITNESS:  Based on this picture, I  
17 can't comment.

18          Q     (BY MS. HORAN)  Okay.  You can put those  
19 aside.

20          A     (Witness complies.)

21          Q     I rent -- -- strike that.

22                A vented raw water reservoir will  
23 maintain an atmospheric pressure; correct?

24          MS. BAUGHMAN:  Objection to form.

25          THE WITNESS:  In general, yes.

1           Q     (BY MS. HORAN) You would agree that the  
2 VOCs in the water at a vented raw water reservoir  
3 will dissipate to reach equilibrium with the VOCs  
4 in the atmosphere at the ratio of Henry's  
5 constant?

6           A     Say that one more time.

7           Q     Sure.

8                     You would agree that the VOCs in the  
9 water at a vented raw water reservoir will  
10 dissipate to reach equilibrium with the VOCs in  
11 the atmosphere at the ratio of Henry's constant?

12          A     I would not agree.

13          Q     And why not?

14          A     Because there's a kinetic aspect,  
15 time-dependent aspect. So given enough time, I  
16 would agree. Given enough time to reach  
17 equilibrium. But the kinetics determine how  
18 close you're able to get to equilibrium in a  
19 limited amount of time.

20          Q     Sure.

21                     So the equilibrium would be attached to  
22 the rate at which the air could flow through the  
23 vents of the raw water reservoir.

24                     MS. BAUGHMAN: Objection to form.

25                     THE WITNESS: Say that again.

1           Q     (BY MS. HORAN) The time it would take  
2 to reach equilibrium would be controlled in some  
3 manner by the rate of flow of air through the  
4 vents.

5                     We can move on.

6           A     Say again.

7           Q     I'll withdraw the question. We can move  
8 on.

9                     In your Coke analogy, having a vented  
10 raw water reservoir is similar to having the cap  
11 off of a Coke bottle; correct?

12          A     No.

13          Q     Why not?

14          A     What you just described would be saying  
15 that the entire top of the reservoir was opened.

16          Q     So your disagreement of a vent -- of  
17 comparing a vented raw water reservoir and the  
18 cap of a Coke bottle is the difference in size?

19          A     Yeah, the -- the extent to which it's  
20 opened to the atmosphere.

21          Q     Could you -- what -- strike that.

22                     The -- would a vented raw water  
23 reservoir be similar to having a straw in a Coke  
24 bottle?

25          A     No.

1 Q And why not?

2 A Well, for one thing, to have the straw  
3 in the Coke bottle, you have the lid off.

4 Q Oh, sure. Okay.

5 So you -- you've sliced a perfectly  
6 sized --

7 A If you drilled a -- well...

8 Q -- hole into the -- if you drilled a  
9 hole into the cap bottle for a straw, would that  
10 be sufficient?

11 A That would -- a very small hole.

12 Q Okay. So having a vented raw water  
13 reservoir is similar to having a Coke bottle with  
14 a straw-sized hole drilled into the cap.

15 MS. BAUGHMAN: Objection to the form.

16 THE WITNESS: A very small hole in the  
17 lid of the Coke bottle. Just look at --

18 Q (BY MS. HORAN) You would agree that the  
19 water towers are vented; correct?

20 A Correct.

21 Q And you agree that the water towers will  
22 maintain atmospheric pressure?

23 A Over time. Correct.

24 Q And you agree that the VOCs in the water  
25 at the vented water towers will dissipate to



1 reach equilibrium at the VOCs in the atmosphere  
2 at a ratio of Henry's constant?

3 MS. BAUGHMAN: Object to the form.

4 THE WITNESS: No.

5 Refer back to the kinetic discussion  
6 from before.

7 Q (BY MS. HORAN) So your disagreement is  
8 in the speed at which it will occur?

9 A (Nods head.)

10 Q But it will occur; correct?

11 MS. BAUGHMAN: Object to the form.

12 Q (BY MS. HORAN) Or I can -- let me  
13 rephrase.

14 A Given an --

15 MS. BAUGHMAN: She wants to rephrase it  
16 so let her do that.

17 THE WITNESS: Okay.

18 Q (BY MS. HORAN) With sufficient time,  
19 the VOCs in the water at the vented water tower  
20 will dissipate to reach equilibrium with the VOCs  
21 in the atmosphere at the ratio of Henry's  
22 constant.

23 MS. BAUGHMAN: Object to the form.

24 THE WITNESS: I disagree because there's  
25 not sufficient time.

1           Q     (BY MS. HORAN)   And if there were  
2     sufficient time, would you agree?

3           MS. BAUGHMAN:   Object to the form.

4           THE WITNESS:   I'm tempted to go into  
5     teaching mode here.

6           Q     (BY MS. HORAN)   Just answer the ques- --  
7     if that --

8           A     No, it's not.

9           Q     Please, go ahead.

10          A     It's not the same.

11          Q     Okay.   So a vented water tower, even  
12     with days, weeks --

13          A     It --

14          MS. BAUGHMAN:   Wait.   Let her finish.

15          Q     (BY MS. HORAN)   -- even with however  
16     much time, would never equilibrate with the  
17     atmosphere at Henry's constant.

18          MS. BAUGHMAN:   Object to the form.

19          THE WITNESS:   Depends upon how you  
20     define "sufficient time."   Given an infinite  
21     amount of time, yes.   Or not even infinite.   I  
22     mean, given a dramatically larger time, yes.

23          Q     (BY MS. HORAN)   And a dramatically  
24     larger time than what?

25          A     Than the detention time in the basins.

1           Q     And I believe we got to a place where if  
2     it's a Coke bottle with a hole drilled in the  
3     top, then that would be similar to a vented water  
4     tower.

5                     Is that fair?

6           MS. BAUGHMAN:   Object to the form.

7           THE WITNESS:   Yes.   There's one caveat.  
8     Where my Coke bottle analogy breaks down is the  
9     carbon dioxide in the head space is pressurized.

10          Q     (BY MS. HORAN)   Uh-huh.

11          A     It's pressurized CO2.   That's how you  
12     get the carbonation into the water.   It's  
13     pressurized.

14          Q     Uh-huh.

15          A     Where as the VOCs in the head space  
16     above the water are not pressurized.   So that's a  
17     difference between the -- that's the place where  
18     the Coke bottle analogy breaks down to water  
19     reservoirs.

20          Q     Sure.

21                     And in the water towers, as the water  
22     levels fluctuate throughout the day or week, the  
23     air will naturally be pushed out or sucked in to  
24     the water tower; correct?

25          MS. BAUGHMAN:   Object to the form.

1 THE WITNESS: Right.

2 Q (BY MS. HORAN) And that's also  
3 different than a Coke bottle because once it's  
4 sealed, no more liquid goes in.

5 A Correct. Although, in one of my  
6 analogies, I suggested Coke was flowing into and  
7 out of the Coke bottle. But correct.

8 Q Do you know whether the water buffaloes  
9 used at Camp Lejeune from 1950 to 1987 had vents?

10 A Are...

11 Q Had vents.

12 MS. BAUGHMAN: Object to the form.

13 THE WITNESS: It depends upon what you  
14 mean by vents. They had filler caps and they had  
15 manholes. Not -- not vents, to my knowledge, of  
16 the nature that -- I'm not sure. I'm unclear.

17 (Government Exhibit 7 marked for identification)

18 Q (BY MS. HORAN) I'm marking as Exhibit 7  
19 -- this is a document with the Bates  
20 Brigham\_USA\_00000044016. And it runs through the  
21 Bates ending in 4038.

22 MS. BAUGHMAN: Which number is this one?

23 MS. HORAN: 7.

24 THE WITNESS: 7.

25 Q (BY MS. HORAN) And I'll represent this

1 is a document that you -- it's on your materials  
2 list. But it's -- I did cut off -- it didn't  
3 print off of the document so this is a shortened  
4 version of it.

5 Have you seen this before, to the best  
6 of your recollection?

7 A Looks -- looks familiar.

8 Q And you agree this is for the M107 water  
9 buffaloes?

10 A Say again.

11 Q This is for the M107 water buffaloes?

12 A I'm looking for that designation.

13 Q If you turn to Page 4017. The --

14 A Oh, down there. Seems to be for the  
15 trailer.

16 Q So is it trailer tank water one, one  
17 half-ton two-wheel 400-gallon, and then it says  
18 M107A1, M107A2, M107A2C.

19 A Okay.

20 Q Do you see that?

21 A Yes.

22 Q Okay. Could you turn to the page ending  
23 in 4031?

24 A (Witness complies.)

25 Q And do you see the top of the page, it

1 says C, the letter, M107 series water tank  
2 trailer?

3 A Yes.

4 Q Okay. And then a little bit further  
5 down the page, there's a key and a chart. And  
6 the second thing listed is the component vent.

7 Do you see that?

8 A Yes.

9 Q And the description of the vent is  
10 "allows air circulation in the tank".

11 Do you see that?

12 A Yes.

13 Q And do you see that that is keyed to  
14 number 21?

15 A Yes.

16 Q And number 21 in the image points to the  
17 water buffalo just in front of the manhole.

18 A Yes.

19 Q Okay. Do you agree that the M107 water  
20 buffalo series had vents?

21 MS. BAUGHMAN: Object to the form.  
22 Foundation.

23 THE WITNESS: Based on this document,  
24 that seems to be the suggestion.

25 Q (BY MS. HORAN) Did you consider, in

1 your calculations, water buffaloes having any  
2 vents?

3 A Not a vent specific, but with the filler  
4 pipe and the manhole acting as a venting basis.

5 Q Would the manhole continue to vent the  
6 water even after it's closed?

7 A No.

8 Q Would you -- do you know, one way or the  
9 other, whether the vent in this image would allow  
10 the water to continue to be vented even after the  
11 manhole is closed?

12 MS. BAUGHMAN: Objection. Form and  
13 foundation.

14 THE WITNESS: Say again.

15 Q (BY MS. HORAN) Sure.

16 So the vent in this image that says  
17 "allows air circulation in tank," do you know  
18 whether that is, I guess, a permanent vent or  
19 whether...

20 A I'm -- I'm not sure.

21 Q In your opinion -- in preparing your  
22 opinions on water buffaloes, did you do any work  
23 to determine whether any other models had vents  
24 or when they were installed?

25 MS. BAUGHMAN: Object to the form.

1           THE WITNESS: We looked at the different  
2 forms over time. Not specifically looking for an  
3 individual component, but looking at the overall  
4 nature of the water buffaloes.

5           Q     (BY MS. HORAN) And do you recall  
6 looking at whether those components included a  
7 vent?

8           MS. BAUGHMAN: Object to the form.

9           THE WITNESS: No. Not that I recall.  
10 I'd have to go back and look at my -- have to go  
11 back and look at my materials.

12          Q     (BY MS. HORAN) Sure.

13          A     Because a vent seems -- anyway. Go  
14 ahead.

15          Q     So turning -- turning to water flow. So  
16 the water flows in -- the water system at Camp  
17 Lejeune flows from water towers into the  
18 distribution system where it eventually ends up  
19 in peoples' homes.

20                Is that fair?

21          A     Yeah. That would be the -- correct.

22          Q     And then between the time that the water  
23 leaves the tap and when it's ingested, there  
24 would be some additional VOC losses.

25                Is that fair?



1 MS. BAUGHMAN: Objection. Form and  
2 foundation.

3 THE WITNESS: That's hard to say.  
4 There's that possibility, but it's hard to know  
5 without more details.

6 Q (BY MS. HORAN) It would depend on the  
7 time that the water is out of the tap and the way  
8 the water's used.

9 Is that fair?

10 A And the spray and the surface area and  
11 time.

12 Q And if the water is boiled when it's  
13 exposed to the atmosphere, the losses will occur  
14 faster than if it's left exposed to the  
15 atmosphere at room temperature.

16 Is that fair?

17 A Would typically be the case.

18 Q And when the water is mixed, losses will  
19 occur faster than if it's left exposed to the  
20 atmosphere and not mixed.

21 Fair?

22 MS. BAUGHMAN: Objection to form.  
23 Foundation.

24 THE WITNESS: In general, yes.

25 Q (BY MS. HORAN) And Henry's Law would

1 continue to govern equilibrium concentrations?

2 A Say again.

3 Q Henry's Law would continue to govern the  
4 equilibrium concentrations?

5 A Henry's Law governs the equilibrium  
6 concentration. But always have to remember  
7 kinetics.

8 Q Sure.

9 And because there are essentially no  
10 VOCs in the atmosphere, Henry's Law dictates that  
11 the water exposed to the atmosphere will lose  
12 essentially all VOCs.

13 MS. BAUGHMAN: Objection to form.

14 THE WITNESS: Again, that's a  
15 time-dependent question.

16 Q (BY MS. HORAN) And given sufficient  
17 time, the answer is yes?

18 MS. BAUGHMAN: Objection to form.

19 THE WITNESS: And then the question is,  
20 what is sufficient time? So yes. Given an  
21 ultimate amount of time, that would be the case.

22 Q (BY MS. HORAN) You agree that the water  
23 treatment plant will not add VOCs to the water.

24 A It's -- it's hard to imagine how that  
25 would be. No, I agree that that's very, very,

1 very unlikely.

2 Q Have you ever been involved with a  
3 project or experienced anything where a water  
4 treatment plant added VOCs to the water?

5 A No.

6 Q I want to turn to the AH Environmental  
7 report that is attached to your report. So I'm  
8 turning back to Exhibit 2. And you have it  
9 attached to your report as Exhibit D.

10 I think we've mostly been doing this,  
11 but if I refer to the AH Environmental report,  
12 you'll understand I mean Exhibit D of your  
13 report; correct?

14 A (Nods head.)

15 Q Is that yes?

16 A Correct. Sorry. Correct.

17 Q When did you first read this report?

18 A Oh, that would be probably -- roughly a  
19 year ago.

20 Q And I -- where did you -- strike that.  
21 Did you find this on the Internet?

22 A No.

23 Q Was this provided to you?

24 A Yes.

25 Q Do you -- so this doesn't have any Bates

1 numbers on it. Do you understand what Bates  
2 numbers are?

3 A I'm sorry?

4 Q Do you -- so a Bates number. Are you  
5 familiar with that term?

6 A I've become familiar with it.

7 Q Fair enough.

8 In your AH Environmental report, the --  
9 the one that you received did not have Bates --

10 A No.

11 Q -- numbers on it either? This is --

12 A Yeah, this is what I received.

13 Q Okay. I believe, earlier, you testified  
14 to having spoken with Mr. Maslia a handful of  
15 times.

16 Was counsel present for all of those  
17 meetings?

18 A Say again.

19 Q When you spoke with Mr. Maslia --

20 A Maslia. Yes.

21 Q -- was counsel present for those  
22 meetings?

23 A Yes.

24 Q Could you turn to Page 1-1 of the AH  
25 Environmental report?

1 A (Witness complies.)

2 Q Okay. The final paragraph, first  
3 sentence, reads, "AH Environmental Consultants,  
4 Inc., AH, was retained by MCB Camp Lejeune under  
5 contract number DACW5603R1013 to assist ATSDR in  
6 obtaining information required for the modeling  
7 efforts in the epidemiological study."

8 Did I read that correctly?

9 A Yes.

10 Q Do you agree with AH Environmental  
11 Consultants that an estimation of VOC removal at  
12 the water treatment plant would be important  
13 information, even required, for the modeling  
14 efforts of epidemiological studies at Camp  
15 Lejeune?

16 MS. BAUGHMAN: Objection. Form and  
17 foundation.

18 THE WITNESS: Say that again.

19 Q (BY MS. HORAN) Sure.

20 Do you agree --

21 MS. BAUGHMAN: Can you show him where it  
22 says that? I don't see where it says that in the  
23 document. Important and required information.

24 MS. HORAN: Well, it says, "Obtaining  
25 information required for the modeling efforts,"

1 in 1-1. Do you see the first sentence in the  
2 last paragraph, Laura?

3 MS. BAUGHMAN: (Nods head.)

4 MS. HORAN: Okay. I'm going to ask my  
5 question.

6 Q (BY MS. HORAN) Do you agree with AH  
7 Environmental Consultants that an estimation of  
8 VOC removal at the water treatment plant is  
9 required information for the modeling efforts in  
10 the epidemiological study at Camp Lejeune?

11 MS. BAUGHMAN: Objection form; objection  
12 foundation.

13 THE WITNESS: I agree that that  
14 statement's in the document.

15 Q (BY MS. HORAN) And do you personally  
16 agree with that?

17 MS. BAUGHMAN: Objection. Form and  
18 foundation.

19 THE WITNESS: Depending upon the degree  
20 of volatilization.

21 Q (BY MS. HORAN) Is it your understanding  
22 that the purpose of the water modeling efforts at  
23 Camp Lejeune were in support of epidemiological  
24 studies?

25 MS. BAUGHMAN: Objection. Form,

1 foundation.

2 THE WITNESS: That was beyond the scope  
3 of my expertise or involvement.

4 Q (BY MS. HORAN) So you have no opinion  
5 on the purpose of the water modeling at Camp  
6 Lejeune?

7 A My understanding was it was related to  
8 potential exposures. But that's the extent of my  
9 understanding.

10 Q Exposures in the sense of  
11 epidemiological studies? Or individuals? Or  
12 what do you mean when you say "exposures"?

13 MS. BAUGHMAN: Objection. Form and  
14 foundation.

15 THE WITNESS: My involvement was focused  
16 on the water quality. So I wasn't involved in  
17 the specifics of what was going to happen beyond  
18 that.

19 Q (BY MS. HORAN) When you say your  
20 involvement was in the water quality, what do you  
21 mean by that?

22 A Well, what we're talking about. My  
23 expert report.

24 Q Oh, okay. And you don't intend to offer  
25 any opinion in court about that purpose of the

1 water modeling.

2 A Say again.

3 Q You don't intend to offer any opinion in  
4 court on the purpose of the water modeling?

5 A Not beyond what's in my expert report.

6 Q Okay. You can set that aside. Or, I  
7 guess, actually turn to Page 7.

8 A 7?

9 Q Yeah. Of your report. Which is Exhibit  
10 2.

11 A (Witness complies.)

12 Q So looking at your first opinion which  
13 begins on Page 7, you opine that only minor VOC  
14 losses occurred in these systems.

15 Do you see that?

16 A Correct.

17 Q And "these systems" refers to storage  
18 treatment and distribution of water at Camp  
19 Lejeune?

20 A Correct.

21 Q You underline the word "minor".

22 Do you see that?

23 A Yes.

24 Q Why?

25 A Show its contrast to Hennet's



1 substantial.

2 Q And you define minor as less than 6 to  
3 12 percent VOC loss.

4 Is that fair?

5 MS. BAUGHMAN: Objection to form.

6 THE WITNESS: It's a relative term to  
7 substantial. Yes.

8 Q (BY MS. HORAN) You're not a  
9 toxicologist, are you?

10 A No. Say again.

11 Q You're not a toxicologist?

12 A No, I'm not. No.

13 Q And you're not a medical doctor?

14 A No.

15 Q So when you say that 6 to 12 percent VOC  
16 loss is minor, you're not speaking about in terms  
17 of someone's exposure.

18 Is that fair?

19 MS. BAUGHMAN: Objection. Form and  
20 foundation.

21 THE WITNESS: That's beyond the scope of  
22 my efforts.

23 Q (BY MS. HORAN) You're not qualified to  
24 make the assessment of 6 to 12 percent VOC loss  
25 as minor, are you?

1 MS. BAUGHMAN: Objection to form.

2 THE WITNESS: Well, from a water  
3 chemistry perspective which is a focus of my  
4 work, I would consider that minor. And that was  
5 the extent of my focus.

6 Q (BY MS. HORAN) Sure.

7 And you're not making the assessment  
8 that 6 to 12 percent VOC loss is minor in the  
9 context of someone's exposure; correct?

10 A That's beyond my expertise and  
11 involvement.

12 Q And when you say 6 to 12 percent is  
13 minor, how did you come to the determination that  
14 that's minor?

15 MS. BAUGHMAN: Objection to form.

16 THE WITNESS: It was in response to  
17 Hennet's substantial. Suggestion that there was  
18 substantial losses. Also just -- well, I think  
19 actually AH Environmental said negligible -- said  
20 10 percent was negligible losses in their expert  
21 review panel meeting. So minor, in a way, is  
22 more generously negligible.

23 Q (BY MS. HORAN) So are you repeating  
24 someone else's characterization or --

25 A Yes.

1 Q -- is it your characterization as minor?

2 A AH Environmental represented Pomm- --  
3 Pommerenk or -- his name -- in the 2005 expert  
4 panel -- was asked about losses. And said 90  
5 percent goes through, 10 percent losses, and  
6 consider that negligible.

7 Q So when you wrote "minor" in your  
8 report, you were adopting what you believed to be  
9 Mr. Pommerenk's characterization --

10 MS. BAUGHMAN: Objection to form.

11 Q (BY MS. HORAN) -- or what an I --

12 MS. BAUGHMAN: Objection to form.

13 THE WITNESS: I wasn't adopting, no. I  
14 was saying, in a relative sense, these losses to  
15 me seemed minor relative to Hennet, relative to  
16 Pommerenk, et cetera. I felt justified in  
17 choosing the term minor.

18 Q (BY MS. HORAN) If you -- so you put in  
19 your report -- and this is on Page 6.

20 A 6?

21 Q 6. Yeah. So just to go over it.

22 The last sentence of the first bullet  
23 says, "Rather than 15 to 32 percent losses by Dr.  
24 Hennet's calculations, I estimate less than 6 to  
25 12 percent losses for the range of VOCs."

1 Do you see that sentence?

2 A Yes.

3 Q Page 14 of your report, Table 5.3, is  
4 your calculations for losses.

5 Fair?

6 A Yes.

7 Q None of those numbers are less than 6.

8 A Well --

9 Q Fair?

10 A None of the numbers listed in the table.

11 MS. BAUGHMAN: I'm going to object to  
12 the form.

13 THE WITNESS: Granted, I rounded 6.3  
14 down to 6 which is mathematically...

15 Q (BY MS. HORAN) Sure.

16 But none of your numbers come up as less  
17 than 6. Is that fair?

18 MS. BAUGHMAN: Objection to the form.

19 THE WITNESS: They do to the extent that  
20 I say less than 1 percent in the storage tanks  
21 and less than 1 in other losses.

22 Q (BY MS. HORAN) So when you were saying,  
23 on Page 6, you estimate less than 6 to 12 percent  
24 losses for the range of VOCs, you were breaking  
25 that to include individual components of your

1 overall calculation?

2 MS. BAUGHMAN: Objection to form.

3 THE WITNESS: Those individual  
4 components are included in the 6.3 value.

5 Q (BY MS. HORAN) Sure.

6 I'm just -- I'm just wondering why you  
7 included less than 6 if the lowest number I see  
8 on your chart is --

9 A Yeah.

10 Q -- 6.3.

11 Is it just a typo? I mean, I'm just --

12 A It's -- you could -- from Table 5.3, I'm  
13 saying the lowest value might have been less than  
14 6. 6.3, 6. So I was just carrying that forward  
15 to my summary statement.

16 Q Okay. So you used less than 6 percent  
17 because Table 5.3 for benzine says less than 6.3.

18 A Correct.

19 Q Okay. As you've used it in your report,  
20 how do you define raw water?

21 A Water --

22 MS. BAUGHMAN: Objection to form.

23 THE WITNESS: Water -- generally, in the  
24 water treatment industry, raw water is the water  
25 coming into the water treatment plant.

1           Q     (BY MS. HORAN)   So raw water as defined  
2     in your report is pre-treatment.

3                     Fair?

4           A     Yes.

5           Q     It's your opinion that assumptions that  
6     Dr. Hennet made in his calculations are what led  
7     to the overestimation of his VOC loss  
8     calculations.

9                     Is that fair?

10           MS. BAUGHMAN:   Objection to form.

11           THE WITNESS:   Say again.

12           Q     (BY MS. HORAN)   It's your opinion that  
13     assumptions that Dr. Hennet -- I'll start again.

14                     Is it your opinion that assumptions in  
15     Dr. Hennet's calculations led to overestimation?

16           A     Assumptions of value that he assume --  
17     values he assumed.

18           Q     On Page 7 of your report, Figure 5.1 --  
19     I think you have it in front of you.   As to  
20     Hadnot Point, you agree that VOCs would be lost  
21     in the raw water storage reservoirs?

22           MS. BAUGHMAN:   Objection to form.

23           THE WITNESS:   Possibility for minor  
24     losses.

25           Q     (BY MS. HORAN)   And in the schematic

1 which is Figure 5.1, there's losses at each stage  
2 of Hadnot Point except for the supply wells and  
3 the water distributions to your homes.

4 Is that fair?

5 MS. BAUGHMAN: Objection to form.

6 THE WITNESS: One more time. I'm sorry.

7 Q (BY MS. HORAN) Sure.

8 Figure 5.1 on your report.

9 A (Indicating.)

10 Q Yep.

11 VOCs would be lost at each stage except  
12 for the supply wells and the water distribution  
13 in the houses, but every other stage shown in  
14 that image would incur VOC losses.

15 Fair?

16 MS. BAUGHMAN: Objection to form.

17 THE WITNESS: Possibly. It's a  
18 possibility. Minor losses.

19 Q (BY MS. HORAN) And when you say "a  
20 possibility of minor losses," do your  
21 calculations -- is it just you're disputing the  
22 volume of losses or that they would happen at  
23 all?

24 MS. BAUGHMAN: Objection to form.

25 THE WITNESS: Just calculations indicate

1     that the losses that are possible would be very  
2     minor.

3           Q     (BY MS. HORAN)   And why would they only  
4     be possible?

5           A     Say again.

6           Q     Why would the losses only be possible  
7     based on your calculations?

8           A     Why would they only be possible?

9           Q     Right.  
10                Wouldn't your calculations suggest that  
11     they're probable?

12          A     Minor --

13                MS. BAUGHMAN:   Objection to form.

14                THE WITNESS:   Minor losses.

15          Q     (BY MS. HORAN)   Sure.

16                So there would be at least minor -- or  
17     strike that.

18                It's your opinion that there would be at  
19     least minor losses in all of the areas shown in  
20     Figure 5.1 except supply wells and water  
21     distribution.

22                MS. BAUGHMAN:   Objection to form.

23          Q     (BY MS. HORAN)   Is that fair?

24                THE WITNESS:   I'd say there's a  
25     possibility of minor losses.   That doesn't mean



1 necessarily that there will be -- they may be  
2 negligible.

3 Q (BY MS. HORAN) And even if they were  
4 negligible, there would be some loss.

5 Fair?

6 MS. BAUGHMAN: Objection to form.

7 THE WITNESS: Yeah, if you consider neg-  
8 -- I wouldn't necessarily consider negligible  
9 losses some losses, but there might be minor  
10 negligible losses.

11 Q (BY MS. HORAN) You've used the term  
12 "negligible". How do you determine what's  
13 negligible in this field?

14 A That's probably a relative term. Well,  
15 not relative. I mean it's -- I would consider  
16 less than 1 percent, for example, is negligible.

17 Q And is that negligible in your --

18 A Of course, I say that, and AH considered  
19 -- referred to 10 percent loss as negligible. So  
20 it's hard to pin that down. It depends.

21 Q The negligible losses that you -- or  
22 strike that.

23 When you say negligible losses, are you  
24 saying negligible in your capacity as a  
25 professional engineer or are you saying

1 negligible in the context of determining  
2 someone's overall exposure as it relates to  
3 health?

4 A No. Water -- drinking water treatment  
5 perspective.

6 Q Okay. So you're not saying negligible  
7 in the sense of how it might impact someone's  
8 overall exposure as it determines --

9 A That's beyond my -- (simultaneous  
10 crosstalk)

11 THE REPORTER: As it determines what?

12 MS. HORAN: Any type of health issue.

13 THE WITNESS: Sorry.

14 That's beyond my expertise to comment  
15 on.

16 Q (BY MS. HORAN) Okay. Could you turn to  
17 the AH Environmental report on Page 5-1?

18 A (Witness complies.) Yes.

19 Q Do you see the last paragraph? The  
20 second sentence reads, "The only significant VOC  
21 removals must have occurred at the spiractor  
22 effluent pipe where the falling water undergoes  
23 some aeration."

24 Do you see that?

25 A Yes.

1           Q     Do you agree with AH Environmental that  
2     significant VOC removals would occur at the  
3     spiractor effluent pipe?

4           MS. BAUGHMAN:   Objection to form.

5           THE WITNESS:    "Significant's" a relative  
6     term.   I read what they're saying is, the only  
7     quantifiable losses unless they use the word  
8     "significant".

9           So what do you mean when you say  
10    "significant"?   So I think what they meant by  
11    "significant" was later in the expert meeting,  
12    they referred to these losses as minor  
13    negligible.   But here, they're saying the  
14    potential loss -- as I read what they're saying,  
15    my interpretation is they're saying, of potential  
16    losses, this was the one that was most evidenced.

17          Q     (BY MS. HORAN)   And do you agree that  
18    there's -- the most evidenced losses would be at  
19    the spiractor effluent pipe?

20          A     Yes.

21          Q     Okay.   And those numbers -- or strike  
22    that.

23                 The amount of losses at the VO -- strike  
24    that.

25                 The amount of VOC losses at the

1 spiractor effluent pipe would not be negligible.

2 Fair?

3 MS. BAUGHMAN: Object to the form.

4 THE WITNESS: Under these conditions.

5 Q (BY MS. HORAN) Is that yes?

6 A Yes. Not negligible. Again, that term  
7 negligible -- because again, in their 2005 expert  
8 panel review, they referred to this level of  
9 losses as minor negligible. So it -- it's a  
10 relative term.

11 Q So turning back to your report on Page  
12 7.

13 A Okay.

14 Q Looking at Figure 5.1. Of the  
15 structures identified in that schematic, the  
16 structure with the most significant VOC losses  
17 would be the spiractor.

18 Fair?

19 MS. BAUGHMAN: Objection to form.

20 THE WITNESS: Based on the analysis and  
21 calculations, that would be fair.

22 Q (BY MS. HORAN) Okay. Turning to your  
23 opinion on spiractor which begins on Page 8 --  
24 and you're, of course, welcome to reference your  
25 report at any point during the deposition.

1           A     Thank you.

2           Q     Your opinion on the percentage loss of  
3     TCE and PCE differs from Dr. Hennet's in that you  
4     find that the effluent fall height is 1 foot and  
5     Dr. Hennet used 2 feet.

6                     Is that fair?

7           A     That's correct.

8           Q     Other than the fall height, is there  
9     anything about Dr. Hennet's opinion related to  
10    VOC losses at spiractors that you disagree with?

11                    MS. BAUGHMAN:  Objection to form.

12                    THE WITNESS:  Not in terms of the  
13    calculation, no.  I would qualify that by saying  
14    I did comment that the spiractor water converges  
15    in the center versus weir where it would be  
16    flowing over the edge.  And so it's not a  
17    difference with Dr. Hennet's calculation, but it  
18    is a qualification to the method applied.

19           Q     (BY MS. HORAN)  Sure.

20                    And on Page 9, in the paragraph -- the  
21    last full paragraph, nine lines down.

22           A     Right.  Yeah.

23           Q     You say, "Thus, while I am not aware of  
24    a better approach than Nakasone 1987 for making  
25    this estimate, it is my opinion the estimated

1 values of VOC losses will be conservative higher  
2 than actually experienced."

3 A Correct.

4 Q Did I read that correctly?

5 A Correct.

6 Q And so in materials of the weir that you  
7 just described --

8 A No.

9 Q -- you're not aware of a better approach  
10 for adding it to this calculation.

11 A No. Correct.

12 Q So you and Dr. Hennet essentially agree  
13 on the methodology for calculating spiractor  
14 losses and you disagree about one input.

15 Is that fair?

16 A Correct.

17 Q And you conclude that AH Environmental  
18 used 1 foot for the water drop in the spiractor  
19 effluent pipe, and that's justified.

20 Is that fair?

21 A Correct.

22 Q You're not offering any independent  
23 assessment of the effluent pipe fall height.

24 A Correct.

25 MS. BAUGHMAN: Objection to form.

1 THE WITNESS: Correct.

2 Q (BY MS. HORAN) Is there any information  
3 besides the AH Environmental report that you  
4 relied on in determining the fall height of 1  
5 foot is more justified?

6 A No.

7 Q Did you review the photos in AH  
8 Environmental's report and determine for yourself  
9 that the fall height was 1 foot or did you rely  
10 on AH Environmental's analysis?

11 A I reviewed the figures and understood  
12 the reasons for why they selected the 1-foot fall  
13 height.

14 Q AH Environmental determined the  
15 spiractor effluent pipe diameter was 12 inches.

16 Do you agree?

17 A That's the number that they used.  
18 Correct.

19 Q Do you know precisely how they made that  
20 measurement?

21 MS. BAUGHMAN: Objection to form.

22 THE WITNESS: It's in -- what I know is  
23 it's in their document.

24 Q (BY MS. HORAN) And sitting here today,  
25 what's your understanding of how they made that

1 measurement?

2 MS. BAUGHMAN: Objection to form.  
3 Foundation.

4 THE WITNESS: They made it based upon a  
5 flowing system where they were able to see the  
6 constricted water down gradient reducing the fall  
7 height, and they made an estimate based upon the  
8 visual observation. It's my understanding. And  
9 I think that's documented, and probably best to  
10 actually go there.

11 I forget exactly where it is in the  
12 report where they describe -- here it is. Page  
13 3-7.

14 Q (BY MS. HORAN) Uh-huh.

15 A The fall height was estimated visually  
16 based on recent photographs. And then on -- so  
17 you see that?

18 Q I do. Yes. So --

19 MS. BAUGHMAN: Were you finished?

20 THE WITNESS: No.

21 Q (BY MS. HORAN) Oh.

22 A I'm sorry.

23 So then if we go to Figure 4-1, Page  
24 4-2.

25 Q Uh-huh.



1           A     You see a Hadnot Point spiractor showing  
2     the evidence of the downstream constriction  
3     limiting the fall height versus --

4           Q     Sorry. Where are you looking?

5           A     4- -- Figure 4-1.

6           Q     Yes. Oh, you're saying this image shows  
7     that to you. You're not pointing to text in the  
8     report.

9           A     No, no.

10          Q     Okay.

11          A     I'm sorry. I'm looking at the figures.

12          Q     Okay.

13          A     And there -- well, in the text, they do  
14     say they -- I've lost over where they say that.  
15     But they picked 1 foot. But the pictures they're  
16     relying upon, 4-1, you can see that the water  
17     isn't free flowing in like it is in 4-3.

18          Q     Uh-huh.

19          A     And so Holcomb Boulevard, they said they  
20     did get the 2-foot drop fall height where as in  
21     Hadnot Point, because of the downstream  
22     constriction from the recarbonation basin, that  
23     back -- what I'll call back water, water wasn't  
24     able to flow freely out of this pipe because of  
25     that. And so we have the 1-foot drop.

1           Q     For Figure 4-1, do you know whether  
2     gravity filters were being backwashed when this  
3     photo was taken?

4           A     No. That's 4-2. They point out that  
5     4-2 was after backwash filter went -- so that  
6     clearly dem -- they were clearly demonstrating  
7     the additional impact of the backwashing the  
8     filters. With that -- well, I'll leave it at  
9     that.

10          Q     So I -- the -- I think -- so I  
11     understand on 3-7, you pointed me to language  
12     that says that the fall height was estimated  
13     visually. But I believe -- do you know how they  
14     measured the pipe diameter?

15          A     No, I do not.

16          Q     Okay. So we're at 12:05. Do we want to  
17     take a break for lunch?

18          A     I can go a little bit longer or --

19                MS. BAUGHMAN: If you want to, we can.  
20     It's up to you.

21                He's willing to go.

22                So you decide.

23                THE WITNESS: Go another 15 minutes or  
24     so. Fifteen, 20 minutes.

25          Q     (BY MS. HORAN) Sure. We can keep

1 going. Okay.

2 Okay. So you agree that AH  
3 Environmental did not measure the Hadnot Point  
4 effluent fall height; they just visually  
5 estimated it. Fair?

6 MS. BAUGHMAN: Objection to form.  
7 Foundation.

8 THE WITNESS: I would say that they made  
9 a measurement based on a visual -- they made a  
10 measurement based on a visual product.

11 Q (BY MS. HORAN) Sure.

12 They didn't measure it. They made a  
13 visual estimation. Fair?

14 A They didn't go out and measure it. They  
15 measured it from the picture which is a  
16 measurement in and of itself.

17 Q Sure.

18 But they didn't go into the field, as  
19 far as you're aware, and measure it with a  
20 measuring tape. Fair?

21 A Not to my knowledge. But I'll add that  
22 a measurement on an empty pipe is of less value  
23 than a measurement on a flowing pipe. Because an  
24 empty pipe doesn't give you the indication of the  
25 -- what we're seeing in Figure 4-1. The

1 important value is how far does that water fall  
2 before it hits bottom, the water.

3 Q Uh-huh.

4 A And that's the volatilization. And so  
5 just measuring the pipe -- measuring the fall  
6 height, for example, from Figure 3-2, you have no  
7 indication of where the water level is dropping  
8 to in that pipe. You don't have any idea of the  
9 actual fall height. All you know is what's the  
10 dimension for an empty spiractor effluent pipe.

11 So for me, a visual measurement from a  
12 picture, we're actually seeing the constricted  
13 water decreasing the fall height is more valuable  
14 than a measurement on an empty pipe where you  
15 have no idea what it was like under operating  
16 conditions.

17 Q Do you know if AH Environmental  
18 estimated based on image of a pipe being used or  
19 an empty pipe?

20 A Let's find their discussion. Okay.  
21 Just above Figure 4.4-1. Okay. So let's start  
22 with only a small vortex.

23 Do you see that?

24 Q Uh-huh.

25 A Formed over the submerged effluent pipe

1 4-1 on one spiractor and they developed an nappe  
2 after a backwash filter went back online.  
3 Because of the downstream recarbonation basin at  
4 that plant, available head does not appear to  
5 allow fall height of greater than 1 foot. And so  
6 -- indicating that they were taking into account  
7 the downstream recarbonation basin reducing the  
8 fall height. Then they go on to say, however, at  
9 Holcomb Boulevard -- because there was no  
10 recarbonation basin, water falls 2 feet.

11 Q So based on 4.1, you determined that it  
12 was reasonable for there to be a 1-foot fall  
13 height at Hadnot Point based on this image?

14 MS. BAUGHMAN: Objection to form.

15 THE WITNESS: That confirmed in my mind  
16 their decision to go with a 1-foot fall height  
17 versus Figure 4-3 for Holcomb Boulevard where  
18 there's no evidence of that back -- that  
19 constriction reducing the fall height they said  
20 there would be 2 feet.

21 Q (BY MS. HORAN) Okay. And how they  
22 determined the 1 foot, what image did you use  
23 from AH Environmental besides -- or maybe there's  
24 none.

25 Did you use any images besides 4.1 to

1 confirm your belief that 1 foot was a reasonable  
2 estimation?

3 MS. BAUGHMAN: Objection to form.

4 THE WITNESS: Figure 4.1 confirmed in my  
5 mind why they chose a 1-foot fall height. And I  
6 know they were -- they had a longer term contract  
7 at this site. So I trusted that, being  
8 professional engineers, they were taking  
9 appropriate measures to make these  
10 determinations.

11 Q (BY MS. HORAN) Could you turn to 3-8?

12 A 3-8?

13 Q Yeah.

14 A Yes.

15 Q You see the image says Hadnot Point  
16 Water Treatment Plant spiractor effluent pipe,  
17 1941, 1942?

18 A Correct.

19 Q Is it your understanding that AH  
20 Environmental is representing that this image was  
21 taken in 1941 or '42? Or what's your  
22 understanding of that?

23 MS. BAUGHMAN: I'm sorry. Are you on  
24 Page 3-8 or Figure 3-8?

25 MS. HORAN: Page 3-8.

1 THE WITNESS: Page 3-8.

2 MS. BAUGHMAN: Okay. Thank you.

3 THE WITNESS: Can you ask that again?

4 Q (BY MS. HORAN) Sure.

5 You see the figure says Hadnot Point  
6 water treatment plant -- well, it says WTP --  
7 spiractor effluent pipe 1941 to 1942?

8 A (Nods head.)

9 Q Is it your understanding that AH  
10 Environmental is representing that this photo was  
11 taken in 1941 or '42 or what -- what do they mean  
12 by that?

13 Do you know?

14 MS. BAUGHMAN: Objection. Form and  
15 foundation.

16 THE WITNESS: I couldn't speak to that.

17 Q (BY MS. HORAN) Have you ever personally  
18 measured a spiractor pipe?

19 A No.

20 Q Do you know if it's even possible to  
21 measure the fall height of a spiractor while it's  
22 in use?

23 A Say that again.

24 Q Is it even -- strike that.

25 Is it possible to measure the fall

1 height of a spiractor effluent pipe while the  
2 spiractor is in use?

3 A I mean I guess, theoretically, it would  
4 be possible. But if you look at the -- looking  
5 for the schematic. So if you look at Figure 3-1.

6 Q Uh-huh.

7 A On Page 3-7.

8 Q Yep.

9 A The effluent pipe is in the center of a  
10 10-foot diameter reactor. So that would make it  
11 -- certainly would -- certainly be possible.

12 Q And it's also in the middle of a 22-foot  
13 drop. Fair?

14 A Correct. Correct.

15 Q So to measure an effluent pipe from a  
16 spiractor, you have to figure out how to get some  
17 type of measurement perched over a 22-foot drop  
18 in the middle of a 10-foot wide metal container  
19 of sorts.

20 Is that fair?

21 A Well, let's look at Page 2-9. Figure  
22 2-4.

23 Q Uh-huh.

24 A I mean, if we're talking about the  
25 realms of possibility.



1           Q     How would you go about measuring a  
2     spiractor effluent pipe while a spiractor is in  
3     use, to determine the fall height?

4           A     Well, I might take a picture.

5           Q     All right. You would take a picture?

6           A     I might. I mean that...

7           Q     And from Image 2.4 -- or Figure 2.4 on  
8     2-9 that you pointed us to, can you figure out  
9     the fall height from this image? Or what type of  
10    image would you need?

11          A     No, no. Not this picture itself. Let  
12    me -- the picture that they have here would be  
13    one way to approach it. The --

14               MS. BAUGHMAN: You have to say what  
15    "here" is.

16               THE WITNESS: I'm sorry. Figure 4-1.  
17    Sorry.

18          Q     (BY MS. HORAN) So if an image of --  
19    like 4-1 was sent to you, you could figure out  
20    the fall height based on this image alone?

21               MS. BAUGHMAN: Objection to form.

22               THE WITNESS: That would be -- that  
23    would be one approach. Probably be a safer  
24    approach. But you could potentially try to rig  
25    up some kind of a -- I don't know. Today, maybe

1 we'd use a drone.

2 MS. BAUGHMAN: You have to explain what  
3 you're looking at when you say that.

4 THE WITNESS: Oh, I'm sorry. Figure 2-4  
5 Page 2-9.

6 If we're trying to get that, you could  
7 rig up some kind of mechanism and try and figure  
8 that out.

9 Q (BY MS. HORAN) What mechanism would you  
10 rig up?

11 A I'd have to think about it.

12 Q Well, it might be a good time for lunch  
13 then.

14 A Okay.

15 MS. HORAN: Can we go off the record,  
16 please?

17 THE VIDEOGRAPHER: Off the record.  
18 12:16 p.m.

19 (Lunch break from 12:16 p.m. to 1:16 p.m.)

20 THE VIDEOGRAPHER: We're back on the  
21 record at 1:16 p.m.

22 MS. BAUGHMAN: Okay. I just want to put  
23 on the record, before we start, that I stated,  
24 off the record, a few minutes ago, that the  
25 materials considered list -- that there's some

1 confusion about that in that the vast majority of  
2 the documents that start at Page 9 of 30,  
3 additional materials considered, are materials  
4 that were provided well -- a year or more -- let  
5 me see -- at least six months before Dr.  
6 Sabatini's rebuttal report was prepared, and are  
7 background materials not specifically relied upon  
8 for the volatilization opinions or any opinion in  
9 his rebuttal report, exception being the ones  
10 that are -- didn't exist at the time which are  
11 depositions, and another exception being a  
12 document with the Bates stamp CLW0000005176  
13 through 5182. And --

14 MS. HORAN: Could you read the title of  
15 the document? Because I think --

16 MS. BAUGHMAN: Grainger Laboratories  
17 Inc., Letter of August 10, 1982. It's possible  
18 this was disclosed earlier, but if not, then that  
19 might be one that's new that hadn't been  
20 disclosed before as something that Dr. Sabatini  
21 is relying on that does relate to volatilization.

22 So in other words, we received -- the  
23 reason I'm saying this is we received an email  
24 from Adam Bain which I read during lunch that  
25 complains about the new documents and the

1 reliance list, and the point being that with the  
2 exception of one document, and with the exception  
3 of documents that didn't exist at the time that  
4 the rebuttal report was submitted to the -- to  
5 the government, there is only one new document.  
6 Which I can give you a copy of now, if you want.  
7 And the rest of this is pure background  
8 information about Camp Lejeune not specifically  
9 relied upon for his opinions.

10 Now, there could be -- I'll say one  
11 caveat. There could be an overlap in that  
12 documents on Pages 1 through 8 may be duplicative  
13 of documents from 9 through 30. If it's in 1  
14 through 8, what I've said does not apply.

15 MS. HORAN: Okay. Sure. Yeah, could  
16 you give us the copy of the document? And I  
17 believe you said, during the break, that there  
18 were three. Is it just the one --

19 MS. BAUGHMAN: It's just the one.

20 MS. HORAN: -- or were there three?

21 MS. BAUGHMAN: It's just the one, but  
22 the one has different parts to it, if that makes  
23 sense. Like --

24 MS. HORAN: Well, I'll look at it.

25 MS. BAUGHMAN: You'll see. It's one.

1 MS. HORAN: Okay.

2 Q (BY MS. HORAN) Welcome back, Dr.  
3 Sabatini.

4 A Thank you. Hope you had a good lunch.

5 Q I hope you did as well.

6 A Thank you. Stella Nova. One of my  
7 family's favorites.

8 Q Yeah. Good for you.

9 Have -- you understand you're still  
10 under oath to tell the truth?

11 A Yes.

12 Q Okay. And when we left right before the  
13 break, we were talking about how one could go  
14 about measuring the spiractor fall pipe while the  
15 spiractor is being used. So while there's water  
16 in it. And I -- do you have any new or --  
17 thoughts on how one would go about doing that?

18 A Not beyond what we discussed before and  
19 not -- not beyond that. No.

20 Q Okay. And you've never measured a  
21 spiractor while it's filled or unfilled.

22 Is that fair?

23 A No.

24 Q No, you have never done it?

25 A I have not done that.

1           Q     Okay. Did AHE or you measure the  
2     relative elevation between the recarbonation  
3     basin water level and the effluent pipe rim  
4     level?

5           A     I can't speak for AH. I assume that  
6     they did a thorough analysis of all the systems  
7     as they document at the beginning of their  
8     report. That they studied all basins and all  
9     plans and schematics and everything. So I can't  
10    speak to what they did. But I did not.

11          Q     Turning to your report which was marked  
12    as Exhibit 2, if we turn to Page 9 -- I'll let  
13    you get there. Table 5.2. In Table 5.2, you  
14    compare AH Environmental and Dr. Hennet's loss  
15    calculations.

16                Fair?

17          A     I compare AH Environmental's corrected  
18    numbers based upon the transposed exponent that  
19    Hennet noted. So yes, it's AH's numbers versus  
20    Hennet's numbers, but AH's corrected numbers.

21          Q     Thank you for that clarification.

22                And then you adopt AH's clarified  
23    numbers for your own calculations.

24                Fair?

25          A     Adopt the 1-foot fall height which leads

1 to the same -- same numbers.

2 Q Sure.

3 So you used the numbers in Table 5.2  
4 that are attributed to AH Environmental for  
5 your calculation --

6 A Those are actually my -- sorry. Pause  
7 before I answer.

8 MS. BAUGHMAN: Wait until she finishes,  
9 and pause and answer.

10 THE WITNESS: Count to three. One, two,  
11 three.

12 I -- I adopted my corrected -- the  
13 number's actually my calculations based upon AH's  
14 1-foot fall height.

15 Q (BY MS. HORAN) Okay. And using a  
16 2-foot -- as opposed to a 1-foot -- fall height  
17 nearly doubles the losses; correct?

18 A It has -- approaching that effect.

19 Q Turning to -- back to the AH  
20 Environmental report in Figure 5 -- 4.2 which is  
21 on Page 4-3.

22 A Okay.

23 Q Do you see that Figure 4.2 shows a -- a  
24 nappe?

25 A Yes.

1 Q And did you see Figure 4.3 right below  
2 it has a more regular water sheet?

3 MS. BAUGHMAN: Objection to form.

4 THE WITNESS: Yes. Non-constricted.

5 Q (BY MS. HORAN) And did you notice that  
6 the Hadnot Point effluent pipe has a heavy crust  
7 deposit compared to the none or less deposit on  
8 the Holcomb Boulevard pipe?

9 MS. BAUGHMAN: Objection to form.

10 THE WITNESS: Ask again.

11 Q (BY MS. HORAN) Did you notice that the  
12 -- there's a heavier crust deposit for the Hadnot  
13 Point effluent pipe -- which is Figure 4.42 --  
14 compared to the no or less deposit in the Holcomb  
15 Boulevard pipe which is 4-3?

16 MS. BAUGHMAN: Objection. Form and  
17 foundation.

18 THE WITNESS: Yeah, I wouldn't be able  
19 to make that discernment based upon this picture.

20 Q (BY MS. HORAN) Could a crust on a  
21 effluent pipe be responsible for the nappe?

22 MS. BAUGHMAN: Objection to form.

23 THE WITNESS: I would refer back to  
24 Figure 4-1. Which doesn't have -- show the same  
25 nappe. And AH attributes the difference between



1 4-1 and 4-2 to the backwashing of the filters.

2 Q (BY MS. HORAN) So let's turn back to  
3 that. On 4-2, in the -- the text above it on  
4 Page 4-2.

5 A Oh, on Page 4-2. I was on Figure 4-2.  
6 Okay.

7 Q Yep.

8 The text above it, there's a sentence  
9 that reads, "Only a small vortex formed over the  
10 submerged effluent pipe, Figure 4-1, on the one  
11 spiractor, and then developed a nappe after a  
12 backwash filter went back online, Figure 4-2."

13 Do you see that?

14 A Yes.

15 Q Okay. Is it your understanding that for  
16 Figure 4-1 was when the backwash water was being  
17 filtered through the effluent pipe?

18 A No.

19 Q What is your understanding?

20 A I know that when the backwash filter --  
21 when a filter's being backwashed, more water is  
22 forced through fewer systems. And so that -- you  
23 get a backup of water, a constriction, as they  
24 described. And so it's clear to me the  
25 difference between 4-1 and 4-2 is the

1     constriction due to the hydraulics of the filter  
2     being backwashed resulting in the nappe, Figure  
3     4-2.

4             Q     So it's your opinion that the nappe is  
5     from the backwashed water --

6             A     That the --

7             Q     -- and the vortex is when there's no  
8     backwash water.

9             MS. BAUGHMAN:   Objection to form.

10            THE WITNESS:   When -- in the absence of  
11     the backwash constriction.

12            Q     (BY MS. HORAN)   So turning back to 4-2,  
13     the language where it says -- the second half of  
14     the sentence I previously read, "And then  
15     developed a nappe after a backwashed filter went  
16     back online."

17            Doesn't that suggest to you that the  
18     nappe was formed after the backwashed filter was  
19     back on?

20            A     Yeah, I don't understand that wording.  
21     I would -- so Figure 4-1, the way I interpreted  
22     it, was at the end of the backwash process, just  
23     as they were putting it back online, that's when  
24     they would have had the greatest impact of a  
25     backwashed filter on the hydraulics.   And so that

1 -- that's when you'd get the maximum hydraulic  
2 impact. So from a hydraulics perspective, that's  
3 how I would interpret that sentence.

4 Q So why would there be more constriction  
5 when there's not backwashing?

6 MS. BAUGHMAN: Objection to form.

7 THE WITNESS: Now, my comment would be  
8 that there would be more constriction when there  
9 was a filter being backwashed.

10 Q (BY MS. HORAN) And more constriction  
11 would be the development of a vortex; correct?

12 A No. No. You would have more -- it  
13 would be harder for the water to go through the  
14 pipe so you would get more backup of the water in  
15 the pipe, and you'd have this scenario, 4-2,  
16 versus the scenario in 4-1.

17 Q When you say more "water in the pipe,"  
18 do you mean the -- which part -- part of the pipe  
19 are you referencing there?

20 A The pipes flowing between the basins.

21 Q So when the spiractor has more water in  
22 it. Or are you talking about the effluent pipe?

23 A Right. Because one filter's offline.  
24 All the water's having to go through the other  
25 filters creating a constriction and a build-up of

1 water prior to that point.

2 Q Okay.

3 A For me, looking at this picture, Figure  
4 4-1 to 4-3 tells, to me, a big story. In that  
5 obviously, you have less free fall of water in  
6 the Hadnot Point effluent pipe than you have in  
7 the Holcomb Boulevard.

8 Q So just looking at the two, though, of  
9 Hadnot Point, one has a -- Figure 1 is shown as  
10 having a vortex in the description and Figure 4-2  
11 is it shown as having a nappe in the -- in the  
12 description.

13 Do you agree with that?

14 A Yes.

15 Q Okay. And it's your opinion that when  
16 the backwash filter is back online, there would  
17 be a vortex and not a nappe.

18 MS. BAUGHMAN: Objection to form.

19 THE WITNESS: I couldn't speak to the  
20 vortex -- to the nap. But what I -- what is  
21 clear to me is that there's less free fall in the  
22 4-2 than the 4-1, and there's less free fall in  
23 4-1 than in 4 -- Figure 4-3.

24 Q (BY MS. HORAN) Sure.

25 But what is your understanding of the

1 process as it relates to the backwash filter,  
2 whether it was on or off, or how it was being  
3 used, for Figure 4-1?

4 A My understanding is, at the end of the  
5 backwash cycle, they have the greatest impact on  
6 the effluent pipe from the spiractor. And when  
7 that backwash filter was brought back online, the  
8 hydraulics changed back to the previous  
9 condition.

10 Q Why would you have less free fall when  
11 the water is less backed up in the spiractor  
12 effluent pipe?

13 MS. BAUGHMAN: Objection to form.

14 THE WITNESS: Say again.

15 Q (BY MS. HORAN) Why would you have less  
16 free fall when the water is less backed up in the  
17 spiractor effluent pipe?

18 A No. What I was saying, there would be  
19 more water backed up. And so the -- you would  
20 have less free fall because there was more water  
21 being backed up.

22 Q And when there's -- is it your opinion  
23 that Figure 4-1 shows more or less free fall than  
24 Figure 4-2?

25 A My impression would be more. Just based

1 on visual observation.

2 Q So just so I understood that correctly,  
3 your opinion is that 4-1 shows more free fall  
4 than Figure 4-2? Or did I get that wrong?

5 A That would be my visual observation.

6 Q Okay. Turning to Page 3-11 of the AH  
7 Environmental report.

8 Dr. Sabatini, do you remember earlier  
9 this morning, we talked about mixing in the  
10 reservoirs?

11 A (Nods head.)

12 Q The first full paragraph on 3-11. Do  
13 you see it reads, "In a quiescent tank, e.g., raw  
14 and finished water reservoirs, filter beds, and  
15 spiractors, the water is assumed to be well  
16 mixed, and the bulk concentration of a  
17 contaminant is equal to the effluent  
18 concentration and can be estimated from a  
19 material balance. VOC volatilization is a  
20 first-order rate process and the remaining  
21 fraction of a chemical can be expressed as  
22 follows." And then it has an equation.

23 Do you see that?

24 A Yes.

25 Q Do you see that AH Environmental assumed

1     that the reservoirs would be well mixed?

2           A     It depends upon what you mean by "well  
3     mixed."    Certainly, the spiractor, I would agree,  
4     was extremely well mixed because of all the flow  
5     coming in.   The reservoirs -- as the water comes  
6     into that reservoir, you have a certain amount of  
7     energy that causes that flow to go into the  
8     reservoir.   So you could get a degree of mixing  
9     from that.   Which would be, I might choose to say  
10    mix -- a degree of mixing as opposed to well  
11    mixed.   To me, well mixed, from a reactor design  
12    perspective, means you have some kind of a  
13    turbine or something mixing the water to get it  
14    well mixed.

15                So I can imagine that what they're  
16    trying to say is that the water coming in creates  
17    a degree of mixing.   But I probably wouldn't  
18    choose to use the term "well mixed."

19           Q     And that's because you would only use  
20    the term "well mixed" if there was some kind of  
21    mechanical process involved?

22           A     Yes.   Mechanical or -- you can achieve  
23    it in different ways, but not just water flowing  
24    into a -- a basin.   And part of that assumption  
25    makes the calculations easier.

1 Q Could you turn back to Figure 4-2?

2 Which is Page 4-3.

3 A (Witness complies.)

4 Q Would you agree that Figure 4-2 which  
5 shows the development of a nappe, that the -- it  
6 would imply -- or strike that.

7 Would you agree that Figure 4-2 which  
8 shows a nappe -- a nappe would imply more surface  
9 area for water-to-air contact?

10 A Say that again.

11 Q Sure.

12 Do you see 4-2 creates a nappe?

13 A Yes. I...

14 Q Okay. And would you agree that a nappe  
15 will create more surface area for water-to-air  
16 contact?

17 A That's a hypothetical question.

18 Q Why is that a hypothetical question, Dr.  
19 Sabatini?

20 A Well, visually, you may see more area  
21 towards the top of the pipe, but there's less  
22 free fall which has area associated with it as  
23 well. So it would be harder for me to  
24 definitively say what the combined impact would  
25 be.



1           Q     I'm -- so I'm not asking about the  
2 combined impact. I'm just asking about the --  
3 the nappe creation.

4           A     Well --

5           Q     At the top of the pipe, would that  
6 create additional surface-to-air contact with  
7 water?

8                     MS. BAUGHMAN: Objection to the form.

9                     THE WITNESS: I'd have to study that  
10 more.

11          Q     (BY MS. HORAN) You said you couldn't  
12 make an overall assessment because the fall  
13 height might be lower because the pipe would be  
14 more full.

15                     Why would a -- the creation of a nappe  
16 mean that the pipe was more full?

17          A     I would --

18                     MS. BAUGHMAN: Objection to form.

19                     THE WITNESS: I would attribute that to  
20 the -- again, to the downstream constriction  
21 causing the -- causing that condition.

22          Q     (BY MS. HORAN) Okay. Turning next to  
23 storage tanks, you agree with Dr. Hennet's use of  
24 the approach laid out in Thomas, 1990 as opposed  
25 to the approach used by AH Environmental;

1 correct?

2 A The same that AH Environmental used and  
3 Hennet used, yes. I...

4 Q And you --

5 MS. BAUGHMAN: Well, I'm going to object  
6 to the form and object as non-responsive. I  
7 don't think he heard the question.

8 THE WITNESS: Oh, I'm sorry.

9 MS. BAUGHMAN: Because he answered  
10 something different from what you asked.

11 THE WITNESS: Can you rephrase the  
12 question?

13 Q (BY MS. HORAN) I thought you answered  
14 it, but I will ask it again.

15 You agree with Dr. Hennet's use of the  
16 more generalized approach laid out in Thomas,  
17 1990 as opposed to the approach that was used by  
18 AH Environmental; correct?

19 MS. BAUGHMAN: Object to the form.

20 THE WITNESS: Yeah, I'd have to go back  
21 and refresh my memory on the terminology.

22 Q (BY MS. HORAN) Okay. Could you turn to  
23 Page 10 of your report?

24 A (Witness complies.)

25 Q The second paragraph suggests that --

1           A     Yeah.  That's what I --

2                     MS. BAUGHMAN:  Wait.  Wait.  Wait.

3                     THE WITNESS:  I'm sorry.

4                     MS. BAUGHMAN:  Let her finish.

5                     THE WITNESS:  Sure.  I'm sorry.

6           Q     (BY MS. HORAN)  -- suggests that AH  
7     Environmental used the Southworth approach, and  
8     you did not agree that that was the appropriate  
9     approach.  You agreed rather with Dr. Hennet that  
10    their more generalized approach was better.

11                    Correct?

12           A     Yes.

13           Q     Okay.  On that same page, the first  
14    sentence of the second full paragraph says, "The  
15    approaches outlined in Thomas, 1990 are for  
16    systems open to the atmosphere, e.g., a pond,  
17    lake, or river.  In contrast, the Camp Lejeune  
18    water treatment tanks, from raw water to clear  
19    well to water towers, are covered.  They are not  
20    open to the atmosphere."

21                    Did I read that correctly?

22           A     That's correct.

23           Q     Is it your opinion -- or strike that.

24                    Dr. Sabatini, you agree that the water  
25    treatment tanks, from raw water to clear well to

1 water towers, would experience air exchange  
2 through venting?

3 A As the water level goes up and down,  
4 there would be atmospheric air. As water level  
5 goes down, then atmospheric air would replace  
6 that amount of water that went down. Yes.

7 So in terms of my terminology, what I  
8 meant by open to the atmosphere was completely  
9 open, like a lake, versus a cover that has small  
10 inter -- or has intermittent vents that's not  
11 completely open.

12 Q But you would agree that the water  
13 treatment tanks have some ability to interact  
14 with the open atmosphere through these vents.

15 Fair?

16 A There is a degree of interaction with  
17 the atmosphere.

18 Q Had you seen any photos of the treatment  
19 tanks at Camp Lejeune prior to submitting your  
20 expert report?

21 A I relied upon the AH Environmental  
22 documents. I'm trying to remember if I had or  
23 not. I don't recall.

24 Q How did you determine that the Camp  
25 Lejeune water treatment tanks were not open to

1 the atmosphere?

2 A That was my impression from the  
3 information I had at hand.

4 Q Anything in particular?

5 A Well, for one thing, I've never known  
6 them to be open to the atmosphere. That's just  
7 allowing for surface contamination of your water.

8 Q Do you know whether there are any drying  
9 beds at Camp Lejeune?

10 A I'm sorry. Whether there are...

11 Q Drying beds.

12 A No, I don't.

13 Q Prior to issuing your report, did you do  
14 anything to try to find out whether there were  
15 drying beds at Camp Lejeune?

16 A That wasn't critical to my calculations.

17 Q And why wasn't that critical to your  
18 calculations?

19 A It didn't bear in to the losses of  
20 concern.

21 And I might just add to that. I didn't  
22 find such information in Hennet's report either.

23 (Government Exhibit 8 marked for identification)

24 Q (BY MS. HORAN) So I'm marking as  
25 Government Exhibit 8 -- this is a document, EPA

1 Region 8 Drinking Water Tech Tips.

2 Dr. Sabatini, have you seen this  
3 document before?

4 A It doesn't look familiar.

5 MS. BAUGHMAN: Do you have the date, by  
6 the way? It doesn't --

7 MS. HORAN: No. I don't have a date.

8 MS. BAUGHMAN: Okay.

9 Q (BY MS. HORAN) Do you see the paragraph  
10 at the top that starts "Finished water storage  
11 sanitary protection"?

12 MS. BAUGHMAN: I'm going to -- you can  
13 take your time and read the document, if you've  
14 never seen it before, before you answer  
15 questions.

16 THE WITNESS: (Reviews document.)  
17 Okay.

18 Q (BY MS. HORAN) Do you see the paragraph  
19 at the top of the document? The first full  
20 paragraph? The second sentence reads -- or did  
21 you have a chance to read that whole paragraph?

22 A Yes.

23 Q Do you disagree with anything in that  
24 paragraph?

25 MS. BAUGHMAN: Objection to form.

1 THE WITNESS: Not in my general -- do  
2 you have a specific question about the paragraph?

3 Q (BY MS. HORAN) That was my question.  
4 When you read it, was there anything that you  
5 disagreed with?

6 MS. BAUGHMAN: Object to the form.  
7 You can carefully read the whole thing  
8 before you answer.

9 MS. HORAN: Laura, I'd like him to --

10 MS. BAUGHMAN: He -- this is his first  
11 deposition.

12 MS. HORAN: I know. And I --

13 Q (BY MS. HORAN) I'm not pushing you, Dr.  
14 Sabatini --

15 A Yeah.

16 Q -- on any document all day.

17 A Yeah, I just read it quickly --

18 Q Sure.

19 A -- not realizing you were...

20 Q Yeah. Take your time.

21 A (Reviews document.)

22 Okay. In this first reading, it all  
23 seems appropriate.

24 Q Okay. Do you see the second sentence  
25 reads, "The air pressure inside of a tank is

1 always trying to equalize with the air pressure  
2 outside as the water level rises and falls in the  
3 tank"?

4 Do you see that?

5 A Yes.

6 Q Do you agree with that?

7 A Yes.

8 Q Okay. You can put that aside.

9 A By the way, this reminds me back to the  
10 water buffalo and the vent.

11 Q Sure.

12 A It would seem somewhat analogous. You  
13 have a small vent pipe on a big surface area  
14 water tank to help equalize pressures.

15 Q Sure.

16 A In the same way that you have here.

17 Q An air exchange would happen in the same  
18 way.

19 A Through the same way.

20 Q Through the vent; correct?

21 A Yeah. In -- as water level rises and  
22 falls. Not forced ventilation.

23 Allergies. I don't know if you can hear  
24 it in my voice. I can.

25 Q If you need a break, let us know.



1           A     A lozenge.

2                   MS. O'LEARY:   Just also, there's some  
3     water if you'd like.

4                   THE WITNESS:   Thank you.   Very kind.  
5     Thank you.

6                   MS. BAUGHMAN:   This is yours, too, if  
7     you need it.

8           Q     (BY MS. HORAN)   You would agree that  
9     fluctuation will occur every day in both the  
10    water reservoirs and the towers; correct?

11                   MS. BAUGHMAN:   Objection to form.

12                   THE WITNESS:   Under normal course of  
13    operation, you would expect that.   Although, that  
14    one CLW showed there were days -- hours and days  
15    where there were minimal fluctuation in a water  
16    reservoir.

17           Q     (BY MS. HORAN)   What CLW are you  
18    referencing?

19           A     Well, I don't have that with me right  
20    now, but it was...

21           Q     Could you just describe the document, to  
22    the best of your recollection?

23           A     Yeah.   It was a document that showed  
24    every four-hour water elevations in a storage  
25    tank over the course of, I think, seven or eight

1 days. And so it showed the water level  
2 fluctuations. It varied from zero to 2 feet  
3 maximum over the seven to eight days. And the  
4 average water fluctuation was 1 foot.

5 Q And where did you first see that  
6 document or -- strike that.

7 When did you first see that document?

8 A I don't recall exactly.

9 Q Do you recall if it was before or after  
10 you submitted your expert report?

11 A I believe before. Yes. I believe  
12 before.

13 Q Do you know if you cite that document in  
14 your report?

15 A Not sure if I did or not. I don't see  
16 it listed.

17 Q So I guess based on this document, is it  
18 your understanding that the fluctuation is, on  
19 average, 1 foot per day in the Camp Lejeune  
20 reservoirs? Or did I misunderstand that?

21 A In this one set of data that they  
22 collected, that was the case.

23 Q Do you recall when the data was from?

24 A '85.

25 Q '85?

1           A     Yeah.  It's what I recall.

2           Q     And was the data from a reservoir or  
3     water tower?  Both?

4           A     Reservoir is what I recall.  Yeah,  
5     reservoir.

6           Q     How much fluctuation is there per day at  
7     a Camp Lejeune water tower, if you know?

8           A     I don't recall.

9           Q     The -- I understand -- or strike that.  
10                You're -- what you've told me today that  
11     there -- it's your understanding that there's  
12     1-foot fluctuations in the Camp Lejeune water  
13     reservoirs.

14               How does that impact your opinions, as  
15     to reservoirs, in your report?

16           A     In my analysis, I assumed that there  
17     would be some fluctuation.  I guess that's the  
18     answer.  I assumed.  So I took that into account.  
19     There would be a certain level of water  
20     fluctuation.

21           Q     Sure.

22               And would it matter if it was 1 foot or  
23     2 feet of fluctuation for your opinion?

24           A     Not -- not -- no.

25           Q     So the amount of fluctuation is not a

1     pertinent -- or the quantification of the amount  
2     of fluctuation is not a pertinent factor, to your  
3     opinion, as to reservoirs?

4             A     Not in that range that you just  
5     mentioned. Now, if the tank emptied and went  
6     from empty to full, the magnitude of the  
7     fluctuation could make a difference. But the  
8     other big difference is -- well, I'll stop there.  
9     That answers your question.

10            Q     How about -- would -- would a 3-feet  
11     fluctuation make an impact to your opinion?

12            A     I'd say no. Because there's other  
13     factors that go into it.

14            Q     A moment ago, you said, well, the other  
15     big factor is, but I'll stop there.

16                   What is the other big difference that  
17     you were alluding to?

18                   MS. BAUGHMAN: Objection to form.

19                   THE WITNESS: The Thomas method, lake  
20     opened to the atmosphere, you have air movement  
21     over the surface. And that increases the  
22     volatilization rate where as in a covered tank,  
23     even vented, you don't have air flowing over the  
24     surface like you would in a -- in a lake. And so  
25     that's another factor that goes into the

1 volatilization rate in the Thomas method.

2 Q (BY MS. HORAN) Sure.

3 Do you know how many times per day the  
4 water levels change at Camp Lejeune in the  
5 reservoirs?

6 MS. BAUGHMAN: Objection to form.

7 THE WITNESS: The CLW I referred to  
8 provided some every-four-hour information, as I  
9 recall, in the '85 timeframe. It gives some  
10 indication of that.

11 Q (BY MS. HORAN) Do you know how fast the  
12 water is flowing in the reservoirs or in the  
13 water tanks?

14 A I don't know that number off the top of  
15 my head. It's something I could calculate, but I  
16 don't know that number off the top of my head.

17 Q Did you calculate it for your opinions?

18 A No.

19 Q And why not?

20 A Because it's not part of the -- the  
21 Thomas method takes detention time into  
22 consideration.

23 Q So instead of determining the flow rate,  
24 you determined detention time?

25 A That was what -- that's what feeds into

1 the...

2 Q Do you know how much water flows through  
3 a Camp Lejeune water reservoir per day?

4 A I can refer to my report. Or actually,  
5 I guess AH Environmental. So it's in the report.

6 Q In the AH Environmental report?

7 A Yes.

8 Q We've talked about mixing in the  
9 reservoirs. Did you take mixing in the  
10 reservoirs into account when you were doing your  
11 calculations for the water reservoirs?

12 MS. BAUGHMAN: Objection to form.  
13 Foundation.

14 THE WITNESS: The Thomas method assumes  
15 completely mixed systems. So to that -- yes, I  
16 did.

17 Q (BY MS. HORAN) Could you identify  
18 where, in your report, you address the reservoir  
19 depth fluctuations? Are they in your report?

20 A No.

21 Q No. Okay.

22 The flow -- as the water flows through  
23 the reservoirs and tanks, would it induce  
24 turbulence in the water?

25 A As it flows through the reservoir, no.

1     There might be -- no. As it flows through the  
2     reservoir.

3             Q     How do you know there would be no  
4     turbulence?

5             A     As the water enters the reservoir, there  
6     may be a little splashing. But just the nature  
7     of the reservoir is such that you wouldn't --  
8     from a hydraulics perspective, you wouldn't see  
9     turbulence.

10            Q     You say, "The Nature of the reservoir."  
11     What do you mean by that?

12            A     Just the tension time. The dimensions  
13     of the basin. Just from a reactor engineering  
14     perspective.

15            Q     Have you ever observed the water flow  
16     through a water reservoir?

17            A     No. I have not. But I've done  
18     hydraulic analyses of such basins.

19            Q     What do you mean by you've done  
20     hydraulic analyses of such --

21            A     Well, that's part of hydraulic -- of  
22     the --

23                   MS. BAUGHMAN: Wait. Wait. Let her  
24     finish.

25                   THE WITNESS: Sorry. Sorry.

1 MS. BAUGHMAN: Go ahead and ask again.  
2 I don't know if it's on the record.

3 Q (BY MS. HORAN) What do you mean by such  
4 -- hydraulic analyses of such basins?

5 A It's part of what you do in design of  
6 treatment plants is, you do reactor engineering  
7 analyses. Hydraulic analyses.

8 Q Have you ever designed a water treatment  
9 plant?

10 A Yes. Based on -- I teach classes on  
11 design of water treatment plants.

12 Q And what class is that?

13 A Physical chemical processes for water  
14 treatment.

15 Q Do you still teach that class today?

16 A As an emeritus professor, I no longer  
17 teach that class. So I last taught it -- well, I  
18 no longer teach that class.

19 Q When did you last teach it, Dr.  
20 Sabatini?

21 A Just before I retired. So three years  
22 ago.

23 Q And was that a class that you taught  
24 every semester?

25 A Say again.



1 Q Did you teach that every semester?

2 A Every year. Every year or every other  
3 year.

4 Q And other than teaching a class, have  
5 you ever designed a water treatment plant that  
6 was built?

7 A Not as a practicing consulting engineer.  
8 I've consulted with former students who were  
9 designing water treatment plants. But not  
10 myself. I understand all the basic principles.

11 MS. BAUGHMAN: Would you mind if we take  
12 a quick break?

13 MS. HORAN: Not at all.

14 MS. BAUGHMAN: Thank you.

15 MS. HORAN: We can go off the record.

16 THE VIDEOGRAPHER: Off the record. 1:59  
17 p.m.

18 (Short break from 1:59 p.m. to 2:06 p.m.)

19 THE VIDEOGRAPHER: We're back on the  
20 record at 2:06 p.m.

21 Q (BY MS. HORAN) Dr. Sabatini, I believe  
22 you mentioned that your water storage tank  
23 calculations took into account some depth  
24 fluctuations of the reservoirs.

25 A Say again. Some...

1 Q Sure.

2 I believe you said earlier that your  
3 calculations as -- under storage tanks took in  
4 some reservoir depth fluctuations.

5 A I assumed that that was the case when I  
6 went through my calculations.

7 Q And how did you take those into account  
8 in your calculation?

9 A I just assumed that that was the case  
10 that -- that's implicit in the Thomas method, was  
11 that there's air for volatilization to occur  
12 into.

13 Q I'm marking as Exhibit 9. This is  
14 Volatilization from Water, by Richard G. Thomas.  
15 (Government Exhibit 9 marked for identification)

16 Q (BY MS. HORAN) Dr. Sabatini, do you  
17 recognize this as the document you've been  
18 referencing as Thomas today?

19 A Yes. Appears to be the same document.  
20 Yes.

21 Q Great.

22 So you've seen this before?

23 A Yes.

24 Q Okay. Could you turn to 15-4?

25 A Okay. (Witness complies.)

1           Q     The first full paragraph, the third  
2 sentence reads, "In the atmosphere, vertical  
3 diffusion is usually more rapid than in the water  
4 and chemicals are transported from the interface  
5 quickly."

6                     Do you see that?

7           A     Yes.

8           Q     Do you agree?

9           A     I agree that molecules diffuse faster in  
10 the air than in water. Yes.

11          Q     So that means that once VOCs volatilize  
12 out of the water, they'll diffuse upwards  
13 quickly. Fair?

14          A     Depends upon what you mean by quickly.  
15 That's where the two-film transfer equation comes  
16 in, in terms of mass transfer across that  
17 interface.

18          Q     They'll diffuse more quickly than if  
19 they were in the water.

20                     Is that fair?

21          A     Yes. They -- molecules diffuse more  
22 quickly in air than in water.

23          Q     And that will cause the concentration  
24 gradient at the water air surface to stay higher  
25 than if the VOCs did not quickly diffuse upwards.

1 Fair?

2 MS. BAUGHMAN: Objection to form.

3 THE WITNESS: In the general principle,  
4 yes. That's fair.

5 Q (BY MS. HORAN) And that will cause the  
6 rate of volatilization to be faster than it would  
7 be if the VOCs did not quickly diffuse upwards;  
8 correct?

9 MS. BAUGHMAN: Objection to form.

10 THE WITNESS: The questions seem to be  
11 hitting on fairly fundamental concepts. But yes.

12 Q (BY MS. HORAN) And because that  
13 gradient is the delta C in the two-film mass  
14 transfer equation in your report which is the  
15 equation 3-3 I believe you just referenced, and  
16 when the delta C increases, the rate of mass  
17 transfer J will also increase; correct?

18 A Say that again. As the delta...

19 Q Sure. And if you would like to open  
20 your report to look at the equation, that would  
21 be fine, too. It's equation 3-3 in your report.

22 A Sure. Yeah. Thank you. Very familiar  
23 with that equation.

24 Q Do you have it in front of you?

25 A Yes.

1 Q Okay. Because the gradient is the delta  
2 C in the two-film mass transfer equation in your  
3 report which you have in front of you and when  
4 delta C increases, the rate of mass transfer  
5 which is J will also increase; correct?

6 A Yes. Correct.

7 Q Okay. Turning back to Exhibit 9 which  
8 is the Thomas study, could you turn to Page  
9 15-20?

10 A (Witness complies.)

11 Q You relied on table 15-3 to determine  
12 that .0046 is the proper oxygen reaeration  
13 coefficient for ponds; correct?

14 A Yes.

15 Q And you agree with Dr. Hennet that ponds  
16 are the proper example to use.

17 MS. BAUGHMAN: Objection to form.

18 THE WITNESS: Yes.

19 Q (BY MS. HORAN) Was that yes?

20 A Yes.

21 Q How did you reach that determination?

22 A Between the alternatives -- lake, river,  
23 and pond -- pond is most appropriate.

24 Q And why was the pond the most  
25 appropriate?

1           A     More similar -- in this range of  
2 options, it's more similar to the reservoir  
3 situation.

4           Q     In what way?

5           A     Size.

6           Q     Anything besides size?

7           A     Size would be surface area.

8           Q     That's it?

9           A     Yes.

10          Q     Okay. And you used the .0046 oxygen re  
11 -- reaeration coefficient to reduce Dr. Hennet's  
12 calculations of volatilization by about 58  
13 percent. Fair?

14                     And again, you're welcome to look back  
15 at your report.

16          A     Reduce them 2 -- 2.58 times his  
17 estimates. Yes.

18          Q     And you agree that Thomas, 1990, the  
19 literature values for oxygen reaeration  
20 coefficients for ponds is between .0046 and  
21 .0096.

22                     Do you see that?

23          A     Literature values?

24          Q     Yes.

25          A     Yes.

1           Q     So you use the lowest literature value  
2     for ponds possible.   Fair?

3           A     Fair.

4           Q     And ponds don't have flowing water.   Is  
5     that fair?

6           A     Generally, no.   They may.   But generally  
7     not.

8           Q     And flower -- flowing water causes  
9     greater reaeration; correct?

10          A     Correct.

11          Q     And that's why in Table 15-3, the values  
12     for rivers are up to two orders of magnitudes  
13     greater than ponds.   Fair?

14          A     Fair.

15          Q     And you agree that water storage tanks  
16     do experience some water flow; correct?

17               MS. BAUGHMAN:   Objection to form.

18               THE WITNESS:    I would say more in the  
19     mode of pond than river certainly.

20          Q     (BY MS. HORAN)   But they do experience  
21     water flow.   Fair?

22               MS. BAUGHMAN:   Objection to form.

23               THE WITNESS:    Well, depends upon what  
24     you mean by flow.   It's -- I mean there is some  
25     minor movement across the -- the tank.   So yes.

1 Q (BY MS. HORAN) Well, every day, a water  
2 storage tank or reservoir has water coming in and  
3 water going out.

4 A That's true.

5 Q Fair?

6 A Correct.

7 Q So every day, there's new water that  
8 appears that flows through the system. Fair?

9 MS. BAUGHMAN: Objection to form.

10 THE WITNESS: Fair.

11 Q (BY MS. HORAN) And ponds don't  
12 necessarily have water that flows in and flows  
13 out of them on a daily basis leading to  
14 fluctuations. Fair?

15 MS. BAUGHMAN: Objection to the form.

16 THE WITNESS: It depends. To a lesser  
17 degree than a river or lake certainly.

18 Q (BY MS. HORAN) And how would you  
19 compare it to a water reservoir in terms of flow  
20 between a pond and a water reservoir?

21 A Probably comparable to more. Probably  
22 more.

23 Q The water reservoir has more flow than a  
24 pond?

25 A Well, that's hard to say. I need to



1 have more of the parameters.

2 Q What parameters would you need?

3 A Well, what particular pond? What ponds  
4 did they use for this study? What were the  
5 conditions in that pond? So it would be hard for  
6 me to make a general statement.

7 Q Okay. So sitting here today, you don't  
8 have an opinion on whether a water reservoir  
9 wherein water flows in and out every day has more  
10 or less flow than a pond?

11 A In general, I would agree, but I  
12 wouldn't want to make that as an overall  
13 conclusion in all cases.

14 Q Sure.

15 So there may be exceptions. But  
16 generally, you agree.

17 MS. BAUGHMAN: Objection to form.

18 THE WITNESS: Sure. I agree.

19 But I might add, back to your analogy to  
20 the river, more than the flowing of the water,  
21 it's the ripples and the surface area that's  
22 associated with that that would have the impact.

23 Q (BY MS. HORAN) So you're saying it's  
24 the ripples in a --

25 A Ripples or waves or undulations that

1       increase the surface area for mass transfer.

2               Q     Sure.

3                       So can we call that turbulence at the  
4       top?

5               MS. BAUGHMAN:   Objection to form.

6               THE WITNESS:   As a hydraulic person,  
7       "turbulence" has a very --

8               Q     (BY MS. HORAN)   Okay.

9               A     -- specific meaning.

10              Q     Okay.

11              A     Laminar flow.   Turbulent flow.   So...

12              Q     Sure.

13                     So what were the terms that you used?  
14       Ripple?

15              A     I said ripples and waves surface area.

16              Q     Do you know whether water that flows  
17       through a water reservoir or a water tank, as it  
18       comes in and out throughout the day, would create  
19       ripples or waves?

20              A     That would be extremely hard.   No, I  
21       would -- I would say not.

22              Q     And why would you say no?

23              A     Just the nature of the flow system.

24              Q     And what about the nature of the flow  
25       system leads you to say no?

1           A     Just the -- well, laminar turbulent flow  
2 conditions. They'd be very much in the laminar  
3 flow regime.

4           Q     And why is that?

5           A     Because of the velocities and the nature  
6 of the flow.

7           Q     But you've never seen inside a water  
8 reservoir to determine whether there are any  
9 ripples or waves across the top as it's filled  
10 throughout the day.

11                  Fair?

12           A     I have not. But the engineering  
13 calculations suggest as much.

14           Q     You would consider a water treatment  
15 plant reservoir that can accommodate 5 million  
16 gallons of water treatment per day to have a  
17 limited flow?

18           A     To say -- I'm sorry. Repeat. To...

19           Q     You would consider a water treatment  
20 plant reservoir that can accommodate 5 million  
21 gallons of water treated per day to have a  
22 limited water flow?

23                  MS. BAUGHMAN: Objection to form.

24                  THE WITNESS: Not a limited water flow.  
25 Limited water velocity.

1 Q (BY MS. HORAN) What is the difference  
2 between water flow and water velocity?

3 A Flow is gallons per day. Volume per  
4 time is flow. Velocity is flow divided by area  
5 which gives you a velocity of feet per -- feet  
6 per second. So if -- if you have a large flow  
7 but a large area, you have a smaller velocity.

8 Q Okay. So if -- so you would say that a  
9 water reservoir that has 5 million -- can take 5  
10 million gallons of water per day would have a low  
11 velocity but high flow?

12 MS. BAUGHMAN: Objection to form.

13 Q (BY MS. HORAN) Did I understand that  
14 correctly?

15 A Again, you can take the flow and divide  
16 it by the area to get the velocity. So if you  
17 have a big flow but a big area, your velocity  
18 doesn't have to be that great.

19 Q Do you know what the velocity of the  
20 water at the Hadnot Point Water Treatment Plant  
21 is in the reservoir?

22 A I could calculate it, but I don't know  
23 that off the top of my head. But all this -- my  
24 discussion of velocity is related to laminar  
25 versus turbulent flow conditions. You're asking

1 about turbulence.

2 Q Sure.

3 And you're saying that these are more  
4 laminar which is more like a pond. Fair?

5 A Right.

6 Q Okay. And do you know what the area of  
7 a Hadnot Point water treatment reservoir is?

8 A It's in the -- it's in their report.

9 Q And without doing the calculations to  
10 determine velocity of the flow in and out of the  
11 reservoirs, how did you determine that it was  
12 more like a pond than a river or a lake?

13 A Just engineering judgment. I mean it's  
14 -- I didn't feel -- just my -- I made the same  
15 assumption that Hennet did and AH Environmental  
16 did. I saw no reason to view it differently from  
17 how they viewed it.

18 Q Sure.

19 Except for you and Dr. Hennet disagree  
20 on what oxygen reaer- coefficient -- fair? To  
21 use.

22 A But for the pond.

23 Q Sure.

24 A We did differ on this discussion.

25 Q So for -- without doing the calculations

1 to determine the velocity, how did you determine  
2 that the best oxygen reaeration coefficient was  
3 the lowest possible value for a pond?

4 A Because unlike a pond which is open to  
5 the atmosphere with a breeze flowing over it, the  
6 reservoir has no breeze flowing over it.

7 Q Any other factors that led you to choose  
8 the lowest possible oxygen reaer- -- reaeration  
9 coefficient?

10 A That -- that was the main one. That was  
11 the -- that was the reason.

12 Q Did you consider the velocity of the  
13 water in any capacity when you were making that  
14 determination?

15 A Just as Hennet and AH Environmental, I  
16 followed the Thomas approach.

17 Q Sure.

18 But when -- in choosing which  
19 coefficient to use in Thomas 1990, you've told me  
20 that the -- the largest reason you chose the  
21 lowest coefficient was because there was no air  
22 flow across the top like a pond. And I'm  
23 wondering if you considered at all the velocity  
24 of the water traveling in and out of a water  
25 treatment reservoir, if that factored into your

1 decision --

2 A It's not a part of -- it's not a part  
3 after the Thomas. So...

4 Q So no?

5 A No. Not beyond the context that it's  
6 incorporated into the Thomas approach.

7 Q Dr. Hennet, to the best you can recall,  
8 did not use the highest available oxygen  
9 reaeration coefficient found in the literature  
10 for ponds.

11 Fair?

12 A I'd have to look back and remember what  
13 value he used.

14 Q And when you were doing your  
15 calculations, you took into account that the  
16 tanks and water reservoirs are vented; correct?

17 A Correct.

18 A Another -- I'm looking now. He used  
19 .008 --

20 Q Uh-huh.

21 A -- which if we're looking at the Thomas  
22 method Table 15-3 on Page 15-20, that is the only  
23 number and a calculated value. So I also used  
24 the literature value. And his calculated value  
25 is towards the high end of the literature value

1 range. So in response to your earlier question.

2 Q Sure.

3 And the higher range of the literature  
4 value is point point -- excuse me -- .0096.

5 A 96.

6 Q Okay. And Dr. Hennet used .008.

7 A 8.

8 Q Fair?

9 A Fair.

10 Q Okay. So it's lower than the highest  
11 value by .0016. Fair?

12 A Fair.

13 Q Okay. Could you turn to 15-8?

14 A (Witness complies.)

15 Q The last paragraph begins, "In view of  
16 these observations and the difficulty of  
17 performing in-situ volatilization experiments, it  
18 is not possible to quantify the error in the  
19 calculated values of the volatilization rate  
20 constants."

21 Do you see that?

22 MS. BAUGHMAN: I -- you said 15-8 -- 18?

23 MS. HORAN: Uh-huh. 15-8.

24 MS. BAUGHMAN: Oh. I'm on the wrong  
25 page.



1                   THE WITNESS:   Okay.   I see the sentence.  
2   Yes.

3           Q     (BY MS. HORAN)   Do you agree?

4           A     I have to defer to the document.   So I  
5   agree that's what the document says.

6           Q     In your professional capacity, do you  
7   agree with that statement?

8                   MS. BAUGHMAN:   Objection to form.

9                   THE WITNESS:   To agree that's their  
10   interpretation, I would agree.

11          Q     (BY MS. HORAN)   The paragraph continues.  
12   "The lake example indicates that the error may be  
13   as large as a factor of 10, although laboratory  
14   data suggests that it could be much less.   When  
15   one is applying the results of calculations to  
16   actual environmental situations, it would  
17   probably be advisable to assume that the value --  
18   values of volatilization rate may be high by a  
19   factor of 10 at most, and low by a smaller factor  
20   of possibly three."

21                   Do you see that?

22          A     Yes.

23          Q     And you see that they are discussing an  
24   example of a lake?

25          A     Yes.

1           Q     You see this is based on it not being  
2     possible to quantify the error to the calculated  
3     values of the volatilization rate constants.

4                 So this is about error. Fair?

5           A     About...

6           Q     Error.

7           A     Error in the estimates. Yes.

8           Q     "Agree that Thomas is saying that for  
9     lakes, losses should be assumed to fall somewhere  
10    within a range that is somewhere between three  
11    times smaller than the calculated and 10 times  
12    bigger than the calculated."

13                MS. BAUGHMAN: Objection to form.

14                THE WITNESS: Says the air may be as  
15    large as a factor of 10 in the volatilization  
16    rate.

17           Q     (BY MS. HORAN) Sure.

18                 And then the second sentence says, "When  
19    one is applying the results of calculations to  
20    actual environmental situations, it would be --  
21    it would probably be advisable to assume that the  
22    values of volatilization rate may be high by a  
23    factor of 10 at most, and low by a smaller factor  
24    of possibly three."

25           A     So the estimates may be 10 times too

1 high.

2 Q That's your interpretation of that?

3 A Yes.

4 Q So you don't believe that Thomas is  
5 saying that for lakes, losses should be assumed  
6 to fall somewhere between a range that's three  
7 times smaller than calculated or ten times bigger  
8 than calculated.

9 MS. BAUGHMAN: Objection to form.

10 THE WITNESS: I -- that's not my  
11 interpretation. No.

12 Q (BY MS. HORAN) In your opinion, you  
13 applied the lowest pond oxygen reaeration  
14 coefficient and assumed, based on a lake example,  
15 that the volatilization rate may be overstated by  
16 a factor of ten.

17 Fair?

18 MS. BAUGHMAN: Objection to form.

19 Q (BY MS. HORAN) And you're welcome to  
20 look at your report.

21 A Say that again.

22 Q In your opinion, you applied the lowest  
23 pond aeration -- reaeration coefficient -- let me  
24 start over. Strike that.

25 In your opinion, you applied the lowest

1 pond oxygen reaeration coefficient and assumed,  
2 based on a lake example, that the volatilization  
3 rate may be overstated by a factor of ten.

4 MS. BAUGHMAN: Objection to form.

5 THE WITNESS: Yes.

6 Q (BY MS. HORAN) And you cite Thomas 1990  
7 for the premise that Dr. Hennet's calculations  
8 should be further reduced to 10 percent of his  
9 calculations.

10 Fair?

11 A Correct.

12 Q Page 11 of your report. The first full  
13 paragraph, the second sentence says, "Given the  
14 disparity between the covered tanks of Camp  
15 Lejeune and the assumption of reservoirs open to  
16 the atmosphere in Thomas 1990, the calculation  
17 errors would obviously be on the high side."

18 Do you see that?

19 A Yes.

20 Q Thomas is not about reservoirs. Is that  
21 -- do you agree?

22 A You're referring to my sentence there.

23 Q Yes. I think it might just be an  
24 error --

25 A As a water resource engineer, I would

1 call a lake a reservoir. We often talk about  
2 reservoir engineering in terms of lakes and  
3 surface bodies. So I'm using the -- I'm using a  
4 more general water resource term there to refer  
5 to a lake or...

6 So I wasn't implying that it was the  
7 same as a tank at the water treatment.

8 Q And you considered that all of the water  
9 reservoirs at Camp Lejeune -- and I mean -- when  
10 I say "water reservoirs", I'm talking about the  
11 -- the water reservoirs in the water treatment  
12 plant.

13 A Yes. Thank you.

14 Q Okay. And you took into account that  
15 the water reservoirs and the water tanks were  
16 vented when you offered your opinion that the  
17 volatilization rate was overstated by a factor of  
18 ten.

19 Correct?

20 A Yes.

21 Q Turning to your opinion on recarbonation  
22 basins. Would use of the recarbonation basin as  
23 designed contribute to the loss of VOCs at Camp  
24 Lejeune?

25 MS. BAUGHMAN: Objection to form.

1 THE WITNESS: One more time. I'm sorry.

2 Q (BY MS. HORAN) Sure.

3 Would use of the recarbonation basin as  
4 designed contribute to the loss of VOCs at Camp  
5 Lejeune?

6 A It's possible.

7 Q Why is it possible?

8 A Well, on any of the basins, could  
9 possibly open to the atmosphere. Could result in  
10 volatilization. The detention time in the  
11 recarbonation basin was very low. So that would  
12 minimize the opportunity.

13 Q Any other reason?

14 A Not beyond what we've already discussed.

15 Q If the water -- did you do a calculation  
16 on what percentage of TCE would have been lost  
17 from the water being recarbonated as the  
18 recarbonations were designed at Camp Lejeune?

19 A Say again.

20 Q Sure.

21 Did you do a calculation to determine  
22 what percentage of TCE would have been lost from  
23 the -- if the recarbonation basins were used as  
24 designed?

25 A Not a calculation. Hennet assigned zero

1 loss.

2 Q Do you know if the recarbonation basin  
3 is open to the atmosphere?

4 A It's my understanding.

5 Q You've referenced Peter Pommerenk a  
6 couple times, I think, in this deposition.

7 A The -- yes.

8 Q Who is Peter Pommerenk?

9 A To my knowledge, he's AH Environmental  
10 person that was part of the project and part of  
11 the expert panel of 2005.

12 Q Outside of your knowledge of his work  
13 with Camp Lejeune, are you familiar with any of  
14 his other work?

15 A No.

16 Q I'm handing -- or marking as Exhibit 10.  
17 This is a document with a Bates  
18 00897\_PLG\_00000066207. And it runs through the  
19 Bates 6365.

20 (Government Exhibit 10 marked for identification)

21 Q (BY MS. HORAN) Dr. Sabatini, have you  
22 seen this before?

23 A Yes.

24 Q And you recognize this as the expert  
25 panel assessing ATSDR's method and analyses from

1 April 29th to the 30th 2009?

2 A Yes.

3 Q Turning to Page 111. And that's just  
4 the regular page number. The last paragraph, the  
5 sixth line down, it begins, "Where as VOC  
6 removal."

7 Do you see that sentence?

8 A Say again. Where...

9 Q So six lines down, there's a sentence  
10 that begins, "Where as VOC removal."

11 A Yes.

12 Q Do you see that?

13 A (No response.)

14 Q Okay. So do you see that that reads,  
15 "Where as VOC removal from other unit processes  
16 at the plant was incidental and probably minor,  
17 substantial removal more than 90 percent might  
18 have occurred in the recarbonation basin. As  
19 with an aeration process, the gas injection  
20 creates substantial turbulence and mixing, and  
21 can facilitate partitioning and removal of the  
22 contaminants from the liquid phase. Therefore,  
23 it is recommended that research be conducted to  
24 determine when the recarbonation was operated,  
25 under what conditions, gas flow rate, et cetera,



1 and what the likely rate of VOC removal was."

2 Did you see that?

3 A Yes.

4 Q So in addition to Dr. Hennet, you also  
5 disagree with Dr. Pommerenk that a recarbonation  
6 basin can remove a substantial amount of VOCs  
7 more than 90 percent.

8 MS. BAUGHMAN: Objection to form.

9 THE WITNESS: Yes.

10 Q (BY MS. HORAN) Do you know whether  
11 ATSDR ever followed Dr. Pommerenk's  
12 recommendation to research when the recarbonation  
13 basin was operated, under what conditions, and a  
14 likely rate of VOC removal?

15 A I can't speak to that. I -- I don't  
16 know one way or the other.

17 Q You would agree that there's no direct  
18 reference to VOC losses at the recarbonation  
19 basin in the formula ATSDR used to determine  
20 monthly VOC levels at Camp Lejeune?

21 MS. BAUGHMAN: Objection to form and  
22 foundation.

23 THE WITNESS: That's a rather sweeping  
24 statement. Can you state it again?

25 Q (BY MS. HORAN) Would you agree that

1 there's no direct reference to VOC losses at the  
2 recarbonation basin in the formula ATSDR used to  
3 determine monthly VOC levels at Camp Lejeune?

4 MS. BAUGHMAN: Objection to form.

5 THE WITNESS: I -- I can't say yes or no  
6 to that. I don't know either way. I'm...

7 Q (BY MS. HORAN) Have you seen any  
8 documents or anything suggesting one way or the  
9 other whether the recarbonation basin was  
10 considered or not?

11 MS. BAUGHMAN: Objection. Form,  
12 foundation.

13 THE WITNESS: The AH Environmental  
14 report.

15 Q (BY MS. HORAN) So, sorry.

16 In the ATSDR formula, have you seen any  
17 documents or any information that suggests  
18 whether the recarbonation basin was considered or  
19 not?

20 MS. BAUGHMAN: Objection. Form;  
21 foundation.

22 Can you show him the -- the ATSDR  
23 formula you're talk -- I don't know what formula  
24 you mean. What are you referring to? Object to  
25 the form. Object to foundation.

1           Q     (BY MS. HORAN)   So I'm -- I'm thinking  
2     of the formula that they used to come up with  
3     their numbers.

4                     Do you know --

5           MS. BAUGHMAN:   I don't know where that  
6     is.

7                     Object to the form.   Object to  
8     foundation.

9           Q     (BY MS. HORAN)   Dr. Sabatini, do you  
10    know whether ATSDR directly considered the  
11    recarbonation basin in determining the monthly  
12    VOC levels at Camp Lejeune?

13           MS. BAUGHMAN:   Objection, form;  
14    objection, foundation.

15                     THE WITNESS:   No.

16           Q     (BY MS. HORAN)   Have you ever seen a  
17    recarbonation basin that was operating?

18           A     Yes.

19           Q     Where?

20           A     Norman, Oklahoma, to begin with.   Many  
21    times.

22           Q     And is that -- why were you looking at  
23    the recarbonation basin in Norman, Oklahoma?

24           A     As -- take classes on field trips there.  
25    Visit there.   It was a part of a -- water

1 treatment studies, et cetera.

2 Q And how large is the recarbonation basin  
3 at the Norman, Oklahoma water treatment plant?

4 A I couldn't speak to the dimensions, but  
5 the water treatment plant is 10 million gallons  
6 per day. So it would be the size of one or two  
7 of these tables.

8 Q Thirty feet in length?

9 A Yeah, maybe. Twenty feet. That would  
10 be -- I probably shouldn't guesstimate.

11 Q Do you know how much carbon dioxide  
12 bubbled into an operating recarbonation basin  
13 reaches the surface?

14 A How much it...

15 Q How much of the carbon dioxide bubbled  
16 into an operating recarbonation basin reaches the  
17 water surface.

18 A No. Not quantitatively. I can see  
19 visually.

20 Q And visually, what percentage would you  
21 suggest?

22 A Be hard to put a number to that. But  
23 again, the goal is for it to dissolve. Some of  
24 it makes it to the surface.

25 Q And you, sitting here today, don't have

1 an opinion on what percentage makes it to the  
2 surface?

3 A Would be hard-pressed to -- that's in  
4 part why I asked...

5 Q Are you looking for the notes from Chris  
6 Mattingly? Exhibit 4.

7 A The -- so that really doesn't address  
8 how much makes it to the surface. But the ratio  
9 is dramatically different from, say, a stripping  
10 operation.

11 Q Okay. So sitting here today, you don't  
12 have a percentage -- or an opinion on what  
13 percentage makes it to the surface --

14 A I wouldn't know -- (simultaneous  
15 crosstalk) wouldn't know at this point. No.

16 Q No.

17 You can set aside Exhibit 10.

18 A (Witness complies.)

19 I will say that on the recarbonation, it  
20 seemed like there was another issue of just how  
21 long it was operated.

22 Q Yeah. Do you know if ATSDR ever looked  
23 into how long it was operated for?

24 MS. BAUGHMAN: Objection to form.

25 THE WITNESS: Not -- not to my

1 knowledge.

2 Q (BY MS. HORAN) As part of your expert  
3 work in this case, did you ever look into how far  
4 -- or how long the recarbonation basin was  
5 operated for?

6 A Just studying the reports that were  
7 available.

8 Q And what did you find in the reports  
9 that were available about whether the  
10 recarbonation --

11 A The lack of knowledge -- (simultaneous  
12 crosstalk)

13 THE REPORTER: I'm sorry. Start over.

14 Q (BY MS. HORAN) Whether the  
15 recarbonation basin was in operation.

16 A Now I've forgotten the question.

17 Q Okay. We'll start from the top.

18 Did you, as part of your work in this  
19 case, ever look into whether and how long the  
20 recarbonation basins were in operation?

21 A Just looking at the available documents.

22 Q And what available documents are you  
23 referencing?

24 A AH Environmental report. Hennes's  
25 report.

1           Q     And did you find anything about whether  
2     the recarbonation basins were in operation?

3           A     Just a lack of knowledge.

4           Q     You agree that if the recarbonation  
5     basin wasn't used, there would have been losses  
6     of VOCs at the recarbonation basin; correct?

7           A     Possible losses. Yes.

8           Q     Would you agree that there were probable  
9     losses at the recarbonation basin?

10           MS. BAUGHMAN: Object to the form.

11           THE WITNESS: Speculating. But  
12     potential would be greater than just water  
13     flowing through the basin.

14           Q     (BY MS. HORAN) When you were at the  
15     Norman, Oklahoma water treatment plant, could you  
16     see bubbles reaching the surface at the  
17     recarbonation basin when it was operating?

18           A     A limited number. Yes.

19           Q     I want to turn next to sorption. Which  
20     your opinion on sorption begins on Page 12 of  
21     your report, if you'd like to -- to take a look.

22                     So when I say "sorption", I'm meaning  
23     both adhesion of VOC molecules to material  
24     surface and VOC molecules permeating into the  
25     bulk of material.

1 Fair?

2 A Say that one more time.

3 Q Sure.

4 A Please.

5 Q When I say "sorption", I mean both  
6 adhesion of VOC molecules to material surface and  
7 VOC molecules permeating into the bulk of  
8 material.

9 Fair?

10 A Fair.

11 Q Does sorption occur at the water  
12 treatment plants at Camp Lejeune?

13 A Say again.

14 Q Does sorption occur at the water  
15 treatment plants at Camp Lejeune?

16 MS. BAUGHMAN: Objection to form.

17 THE WITNESS: That would be speculation.

18 Q (BY MS. HORAN) You don't know?

19 A I have not quantified it. My  
20 professional judgment would be it would be very  
21 minor, but I have not -- I -- to my knowledge, no  
22 one else has quantified it.

23 Q Is there organic material in the  
24 spiractor solids?

25 A The spiractor is designed to remove



1 hardness as a inorganic precipitant.

2 Q Is that a yes or a no?

3 A So that would be the dominant thing  
4 present in the spiractor.

5 Q So you agree that there is organic  
6 material in the spiractor solids?

7 A I'd be speculating. It's -- I'd be  
8 speculating.

9 Q Sitting here today, you don't know one  
10 way or the other whether there's organic material  
11 in the spiractor solids?

12 MS. BAUGHMAN: Object to the form.

13 THE WITNESS: I guess my statement would  
14 be it's predominantly inorganic material. If  
15 there were -- happened to be inorganic material,  
16 it would be very minor in my estimation.

17 Q (BY MS. HORAN) And what is that based  
18 off of? What is that assessment based off of?

19 A That the reason the spiractor there is  
20 to remove inorganic materials. Hardness.

21 Q So your experience with other --

22 A Water treatment.

23 Q With water treatment plants.

24 A Yes.

25 Also, I would add to that if it were

1 lake water, there might be more natural organic  
2 matter associated with the lake water. Low  
3 levels. But since this is groundwater, I'd even  
4 expect lower -- I wouldn't -- wouldn't expect  
5 there to be organic matter present.

6 Q So it's your opinion that there would  
7 not be organic material in the raw water at Camp  
8 Lejeune.

9 Am I understanding that?

10 MS. BAUGHMAN: Objection to form.

11 THE WITNESS: Based upon the groundwater  
12 source, I would expect it to be very limited to  
13 negligible.

14 Q (BY MS. HORAN) If you assume that the  
15 spiractor solids contain some organic material,  
16 would some TCE sorb to that material?

17 MS. BAUGHMAN: Objection. Form and  
18 foundation.

19 THE WITNESS: Yeah, that's very  
20 speculative. I'd need to know what kind of  
21 organic matter. If it's just humic and fulvic  
22 plant decay or is it biochars or -- I would  
23 expect not.

24 Q (BY MS. HORAN) You would expect that  
25 the TCE would not sorb to the organic material in

1 the spiractor solids?

2 MS. BAUGHMAN: Objection. Form and  
3 foundation.

4 THE WITNESS: It's all very speculative.  
5 I would expect that if there were inorganic  
6 matter present matter, if, it would be minor and  
7 -- and not that absorptive for these compounds  
8 because of the nature of the organic material.

9 Q (BY MS. HORAN) You mentioned it matters  
10 what type of organic material would be in the  
11 spiractor, and you listed a few.

12 Would TCE only sorb to some of those or  
13 would TCE sorb to all of the organic materials  
14 that you listed?

15 A Depends.

16 Q On what?

17 A Well, again, on the nature of the  
18 organic material. Could be negligible. Could be  
19 minor. Depending upon the nature of the organic  
20 material.

21 Q In your PhD, you studied sorption of  
22 organic chemicals in a sand aquifer.

23 Fair?

24 A Fair.

25 Q Any sorption taking place there?

1           A     Yeah, those are -- yes.

2           Q     Is there sorption taking place in the  
3 filter beds that have to be backwashed to remove  
4 clogging?

5           MS. BAUGHMAN:  Objection to form.

6           THE WITNESS:  Again, you're removing  
7 inorganic materials in the backwashing.  Fines  
8 that have made it out of the spiractor to the  
9 filter beds.  So we'd be talking about the same  
10 materials.  So the same --

11          Q     (BY MS. HORAN)  So yes?

12          A     Same comments from before would apply.

13          Q     You mentioned before -- well, strike  
14 that.

15                Do you know, or in your studies, have  
16 you determined whether TCE sorbs to organic  
17 material?

18          A     Trying to remember.  We looked  
19 specifically at TCE.  We looked at a number of  
20 different compounds.  Certainly would have the  
21 potential to.

22          Q     And I believe you said it would be  
23 negligible or minor.  Am I remembering that  
24 correctly?

25          A     Based on the inorganic materials being

1 removed in the spiractor, that would be my  
2 expectation.

3 Q Okay. So there would be some sorption  
4 of TCE in the inorganic material, and it's your  
5 opinion that it would be minor or negligible?

6 MS. BAUGHMAN: Objection to form.

7 THE WITNESS: We're assuming that there  
8 is any organic material to begin with.

9 Q (BY MS. HORAN) Yes. I'm asking you to  
10 make that assumption.

11 A Which I'm uncomfortable making.

12 Q Why is that?

13 A Well, just I'm not anticipating for  
14 groundwater that that would become an issue. But  
15 none the less, if somehow, that happened to be  
16 the case, you could imagine some potential  
17 sorption.

18 The other factor is the timeframe  
19 involved. Kinetics of its sorption.

20 Q Why does the timeframe matter?

21 A Because it -- you mentioned if -- if it  
22 has to diffuse into the matrix to get to the  
23 sorption site, that takes time.

24 Q So why would -- strike that.

25 But how would the time impact whether

1 TCE can sorb to organic material?

2 A It may not have time. Even if there  
3 were organic material and even if the TCE did  
4 absorb, there may not be sufficient time to  
5 achieve the potential sorption.

6 Q Is there any sorption on inorganic  
7 surfaces?

8 A The Schwartzbach paper referenced some  
9 level of sorption to inorganic materials, but for  
10 highly hydrophobic compounds.

11 Q So is that a yes?

12 A There is that possibility.

13 Q Is there any coprecipitation on the  
14 mineral that precipitate in the spiractor?

15 A Coprecipitant of...

16 Q On the mineral that precipitate in the  
17 spiractors. The VOC.

18 MS. BAUGHMAN: Object to the form.

19 THE WITNESS: VOCs don't precipitate.  
20 The minerals would precipitate. So VOCs wouldn't  
21 precipitate.

22 Q (BY MS. HORAN) Would there be any  
23 coprecipitation on the mineral with the VOC that  
24 precipitate in the spiractor?

25 MS. BAUGHMAN: Object to the form.

1 THE WITNESS: Ask that one more time.

2 Q (BY MS. HORAN) Would there be -- do you  
3 know if anthracite is part of the sand filter  
4 medium?

5 A I'd have to look at the document.

6 Q So sitting here today, you don't know  
7 one way or the other?

8 A I don't recall.

9 Q Assuming that there is --

10 A Well, let me -- to that point.

11 Q Sure.

12 A AH says it's a dual filter media.  
13 Filter media consisted of 26 inches of sand on  
14 top of 18 inches of gravel. So AH says no.

15 Q So you believe there's no anthracite as  
16 part of the sand filter medium?

17 A According -- rephrase the question.

18 Q It's your understanding that there's no  
19 anthracite as part of the sand filter medium?

20 A That's according to AH.

21 Q Okay. Assuming that there is  
22 anthracite, would anthracite sorb some of the  
23 TCE?

24 MS. BAUGHMAN: Objection to form and  
25 foundation.

1 THE WITNESS: I have to not put on my  
2 teacher hat here and talk about the difference  
3 between anthracite and activated carbon.

4 Very minimal.

5 Q (BY MS. HORAN) Would VOCs --

6 MS. BAUGHMAN: Wait. Wait.

7 THE WITNESS: Because -- because -- I am  
8 going to go into a little bit of my teacher mode.

9 Anthracite is a carbon-based mineral  
10 material like activated carbon, but the  
11 difference is activated carbon has been activated  
12 to give it an extremely high surface area where  
13 as anthracite has not been activated. So while  
14 it is a carbonaceous material, it would -- has  
15 dramatically less, if -- if any absorption, minor  
16 relative to activated carbon.

17 It's the explanation I had to give to my  
18 chemical engineering colleagues.

19 Q (BY MS. HORAN) So it would be less than  
20 if it was active carbon, but there would be some  
21 sorption.

22 MS. BAUGHMAN: Objection to form.

23 THE WITNESS: Possibly. Possibly.

24 Q (BY MS. HORAN) Would VOCs coprecipitant  
25 with minerals in the spiractor?



1           A     I just struggle with the concept of VOCs  
2 precipitating. Coprecipitating to me is  
3 incorporated into the mineral. Another mineral  
4 being incorporated in with a mineral.

5           So based -- based on the way the  
6 question is phrased, I'm confused by the  
7 question.

8           Q     Would VOCs come out of the water with  
9 minerals in the spiractor?

10          A     One more time. I'm sorry. I keep  
11 asking you to repeat, but...

12          Q     No. That's okay.

13          A     Thank you for your patience.

14          Q     No. Thank you for ensuring that you  
15 understand the question.

16                Would VOCs come out of the water with  
17 minerals in the spiractor?

18               MS. BAUGHMAN: Objection to form and  
19 foundation.

20               THE WITNESS: I would not envision them  
21 being enmeshed with the precipitant. I would say  
22 no.

23          Q     (BY MS. HORAN) And why wouldn't you  
24 envision it?

25          A     Because they're dissolved in solution

1       versus precipitates.

2               Q     And when you say dissolved in solution,  
3       you mean water?

4               A     In water.   Yes.

5               Q     You state that the backwash water, after  
6       settling, may be reused at the plant.

7                     Do you recall that?

8               A     Yes.

9               Q     Do you know if that was the case at the  
10      Hadnot Point water treatment plant?

11              A     No.

12                     I'll say comments in response to  
13      Hennet's suggestions of these items.

14              Q     So you don't know if that was the case  
15      at the Hadnot Point water treatment plant?

16              A     I don't.   No.

17              Q     So you would agree that that would lower  
18      the losses even though there's no data supporting  
19      that?

20                     MS. BAUGHMAN:   Objection to form,  
21      foundation.

22                     THE WITNESS:   Can you ask that again?

23              Q     (BY MS. HORAN)   Do you agree that  
24      bringing this conservative element into your  
25      opinion would lower the losses even if there's no

1 data supporting that?

2 MS. BAUGHMAN: Same objections.

3 THE WITNESS: I'm tempted to say that I  
4 was responding to a suggestion that had no  
5 supporting data.

6 Q (BY MS. HORAN) So you assumed the  
7 opposite without any data?

8 MS. BAUGHMAN: Objection to form.

9 THE WITNESS: I would say I was taking a  
10 more systematic approach to trying to address the  
11 question that was raised by someone else.

12 Q (BY MS. HORAN) So I'm about to switch  
13 topics. Are you good to keep going or did you  
14 want to take a break?

15 MS. BAUGHMAN: It's up to you.

16 THE WITNESS: Go for a little bit  
17 longer.

18 MS. BAUGHMAN: Okay. If you want to  
19 keep going. Sure.

20 Q (BY MS. HORAN) Turning to your second  
21 opinion which is -- starts on Page 14 of your  
22 report.

23 A Have we moved off the first opinion?

24 Q I believe so. Did -- yes.

25 A Because there was one comment I'd like

1 to offer.

2 Part of what reinforced my assessments  
3 -- well, it leads into the second opinion so  
4 let's go to the second opinion.

5 MS. BAUGHMAN: It's really best if she  
6 just asks the questions and you answer.

7 THE WITNESS: Yeah.

8 MS. BAUGHMAN: Okay.

9 THE WITNESS: Let's go to the second  
10 opinion.

11 Q (BY MS. HORAN) So the -- the second  
12 opinion begins on Page 14 of your report to the  
13 extent you're following along.

14 You would agree the ATSDR model does not  
15 directly account for VOC losses from the Camp  
16 Lejeune water treatment plant; correct?

17 MS. BAUGHMAN: Objection to form.

18 THE WITNESS: I was turning to the page  
19 here. I'm sorry.

20 Q (BY MS. HORAN) Sure.

21 You would agree the ATSDR model does not  
22 directly account for VOC losses from the Camp  
23 Lejeune water treatment plant.

24 MS. BAUGHMAN: Objection to form.

25 THE WITNESS: I would agree that it is

1 indirectly incorporated.

2 Q (BY MS. HORAN) Sure. Not directly.

3 Fair?

4 A I guess not explicitly, but implicitly.

5 Q Have you read Mr. Maslia's rebuttal  
6 report?

7 A Ms. --

8 Q Mr. Maslia's rebuttal report.

9 A I'm -- I'm sure I have.

10 Why do you ask?

11 MS. BAUGHMAN: She's going to get to it.

12 Hold on.

13 Q (BY MS. HORAN) I'm marking as Exhibit

14 11. This is Mr. Maslia's rebuttal report.

15 (Government Exhibit 11 marked for identification)

16 THE WITNESS: Okay.

17 Q (BY MS. HORAN) Could you turn to Page  
18 31, please?

19 A (Witness complies.)

20 Okay.

21 Q So beginning on Page 27, Mr. Maslia  
22 offers a section volatilization of VOCs during  
23 the water treatment process.

24 Do you see that?

25 A Yes.

1 Q Okay. And you agree that the ATSDR  
2 determined that VOC losses at the water treatment  
3 plant were negligible, and therefore, made the  
4 decision not to include them.

5 A I'm sorry. I was looking at Page 27.

6 Q Sure. Yeah, if you could just turn to  
7 Page 31.

8 A Okay. (Witness complies.)

9 Q Okay. The last sentence of the first  
10 full paragraph --

11 A Okay.

12 Q -- reads, "In light of the conclusions  
13 of AH Environmental consultants 2004 and the  
14 recommendation of its expert panels, ATSDR made  
15 the decision to consider any potential VOC losses  
16 from storage treatment and distribution as  
17 negligible."

18 Did I read that correctly?

19 A Yes.

20 Q Do you know what the ATSDR's decision to  
21 consider the losses as negligible meant with  
22 respect to the ATSDR model?

23 A What do you mean by that?

24 Q The ATSDR made the decision to consider  
25 the losses negligible. Fair?

1           A     (Nods head.)

2           Q     Do you know what impact that had on the  
3     ATSDR model?

4           MS. BAUGHMAN:  Objection to form and  
5     foundation.

6           THE WITNESS:  Well, I guess I would  
7     respond to that by virtue of my second opinion,  
8     that they did use post-treatment values in their  
9     model, finalizing their model.

10          Q     (BY MS. HORAN)  So you believe that  
11     their decision to consider them negligible meant  
12     that indirect consideration, as you've explained  
13     in your opinion, do.

14          MS. BAUGHMAN:  Objection to the form.

15          THE WITNESS:  I guess I would say yes,  
16     that they consider them implicitly through the  
17     use of those data.

18          Q     (BY MS. HORAN)  Do you know how ATSDR  
19     came to the conclusion that these losses were  
20     negligible?

21          MS. BAUGHMAN:  Objection to form.

22          THE WITNESS:  No.  My impression is just  
23     what's here.  That they took this -- I mean this  
24     is what I would say is that they took the input  
25     of Pommerenk -- if I'm saying his name right --

1 in this expert panel to support their approach.

2 Q (BY MS. HORAN) Do you know what the --  
3 well, I might have asked you this before, but I  
4 can't quite remember.

5 Do you know what the purpose of the  
6 ATSDR water model was?

7 A You did ask that before.

8 MS. BAUGHMAN: Objection. Form and  
9 foundation.

10 THE WITNESS: My impression is to get a  
11 handle on VOC measurements -- VOC estimates in  
12 the drinking water.

13 Q (BY MS. HORAN) Would you agree that if  
14 you are trying to determine an individual's  
15 actual exposure to contaminants, it would be  
16 important to be as accurate as possible?

17 MS. BAUGHMAN: Objection to form.  
18 Foundation.

19 THE WITNESS: That's a generic question.  
20 Depends upon what you mean by "accuracy".

21 Q (BY MS. HORAN) How would you use  
22 accuracy when you're determining an individual's  
23 actual exposure to contaminants?

24 MS. BAUGHMAN: Objection to form;  
25 foundation; outside the scope.



1           THE WITNESS: There's always uncertainty  
2 in data. So accuracy is -- is a challenging  
3 thing to achieve. Obviously, you want to be as  
4 -- want to do as good a job as you can.

5           Q     (BY MS. HORAN) You can set that report  
6 aside.

7           A     By the way, to your earlier question,  
8 have I seen this, yes, I did review this.

9           Q     Oh, okay. Great. Thank you for  
10 clarifying.

11           If you wanted someone to know what their  
12 contaminant exposure was and whether it may have  
13 caused an illness, it would be important to be as  
14 accurate as possible; correct?

15           MS. BAUGHMAN: Objection. Form and  
16 foundation, and outside the scope.

17           THE WITNESS: Thought we kind of asked  
18 and answered that question. Certainly want to be  
19 as -- do as good a job as you can.

20           Q     (BY MS. HORAN) And you wouldn't want to  
21 be 5 or 10 percent off. Fair?

22           MS. BAUGHMAN: Objection. Form;  
23 foundation; outside the scope.

24           THE WITNESS: I guess that depends, in  
25 part, upon how the data is being used. What the

1 epidemiologists and toxicologists need for their  
2 side of the assessment.

3 Q (BY MS. HORAN) Is it your opinion that  
4 treatment losses were indirectly accounted for  
5 because some values of treated water were used in  
6 the calibration process?

7 A They were used in the model. Finalizing  
8 the model. Yes.

9 Q What do you mean "finalizing the model"?

10 A I'm -- whether it's calibration  
11 validation or when it was in the process that  
12 they used the data. And that wasn't my focus. I  
13 did know that they used it in their -- finalizing  
14 their model, however they used it, in that  
15 regard.

16 Q And you're not sure if it was  
17 calibration or validation. Is that fair?

18 A That was beyond the scope of my expert  
19 report. So...

20 Q How did you determine that the data was  
21 considered -- well, strike that.

22 A I'll look back at my --

23 MS. BAUGHMAN: She -- she said, "Strike  
24 that." That means she's not asking you that.

25 THE WITNESS: Okay.

1 MS. HORAN: So you're good.

2 Q (BY MS. HORAN) Could you please turn to  
3 your report, Exhibit 2, on Page 16?

4 A I'm sorry. Which page?

5 Q 16.

6 A (Witness complies.) Yes.

7 Q The last sentence of Section 2 is  
8 bolded. It reads, "Thus, for both the Tarawa  
9 Terrace and Hadnot Point systems, treated water  
10 samples were used in the calibration process" --

11 A Yeah.

12 Q -- "and the ATSDR did consider such  
13 losses in the treatment system."

14 A Yeah.

15 Q Did -- did I read that correctly?

16 A Yes.

17 Q So it's your opinion that because the  
18 values were used in a calibration process, they  
19 were indirectly considered in the ATSDR.

20 A Yes.

21 Q Okay. Is it your opinion that VOC  
22 treatment losses were accurately accounted for in  
23 the ATSDR model?

24 MS. BAUGHMAN: Objection to form.

25 THE WITNESS: Yes.

1 Q (BY MS. HORAN) If you'd turn to Page  
2 14.

3 A (Witness complies.)

4 Q Starting with your Opinion 2 as to  
5 Hadnot Point, you state, "In fact, in his expert  
6 report, Maslia points out that the reconstructed  
7 concentrations versus the observed data in Table  
8 1.7.15 Table 5-5 in this report demonstrates  
9 successful level for calibration indicating that  
10 the treated water samples were used in the final  
11 calibration step for Hadnot Point."

12 Do you see that sentence?

13 A Yes.

14 Q And that sentence -- part of that  
15 sentence is a direct quote from Mr. Maslia's  
16 report. Fair?

17 A Yes. I assume.

18 MS. BAUGHMAN: That's the rebuttal; not  
19 the original report.

20 THE WITNESS: Oh, okay.

21 Q (BY MS. HORAN) We'll --

22 A Yes.

23 Q -- look at his report in a moment.

24 It's your understanding, having now  
25 reread this part of your report, that for Hadnot

1 Point, the data points were used for level 4  
2 calibration.

3 Is that fair?

4 A It's my understanding.

5 Q Do you mean that the model parameters  
6 were adjusted to fit the water distribution  
7 system data?

8 MS. BAUGHMAN: Objection. Form;  
9 foundation; outside the scope.

10 THE WITNESS: That wasn't part of my --  
11 that wasn't part of my assessment, the model  
12 itself. How the model was calibrated.

13 Q (BY MS. HORAN) Do you know if any  
14 parameters were adjusted in light of the level --  
15 or the data from the water distribution system?

16 A It's beyond my scope.

17 Q Are you offering the opinion that the  
18 Hadnot Point level 4 calibration was successful?

19 A My opinion --

20 MS. BAUGHMAN: Objection to form;  
21 foundation.

22 THE WITNESS: My opinion states that  
23 they incorporated these parameters in their  
24 process. I have not offered an opinion as to  
25 beyond that.

1 Q (BY MS. HORAN) So are you offering --  
2 so you're not offering an opinion on whether the  
3 level 4 calibration was successful.

4 MS. BAUGHMAN: Objection. Form;  
5 foundation.

6 THE WITNESS: Well, my opinion states  
7 that...

8 Q (BY MS. HORAN) Well, you've quoted Mr.  
9 Maslia as saying a successful level 4  
10 calibration, and I'm wondering if you're adopting  
11 that opinion or not.

12 A I'm not --

13 MS. BAUGHMAN: Objection to form;  
14 foundation.

15 I'm sorry. Where does -- I don't -- I'm  
16 looking for the word "successful".

17 MS. HORAN: It's the last row of Page  
18 14. It says, "Demonstrates successful level 4  
19 calibration" --

20 MS. BAUGHMAN: Gotcha.

21 MS. HORAN: -- "as part of the quote  
22 from Mr. Maslia's report."

23 Q (BY MS. HORAN) And I'm trying to  
24 understand if you're adopting that.

25 MS. BAUGHMAN: Objection to form.

1                   THE WITNESS:   What do you mean by  
2   "adopting"?

3           Q     (BY MS. HORAN)   Well --

4           A     I'm agreeing with his professional  
5   judgment.

6           Q     So you agree with Mr. Maslia that it was  
7   a successful level 4 calibration.

8           A     That's his area of expertise and so I  
9   agree with his assessment.

10          Q     Did you do anything to independently  
11   verify whether the level 4 calibration was  
12   successful?

13          A     That was beyond the scope of my work.

14          Q     Are you offering the opinion that the  
15   use of some treated water data points in the  
16   level 4 calibration means that the model  
17   accurately captured VOC losses at the water  
18   treatment plant?

19                MS. BAUGHMAN:   Objection to form.

20                THE WITNESS:   My opinion speaks for  
21   itself.   That's the only opinion I have is what  
22   is stated.

23          Q     (BY MS. HORAN)   Yeah.

24                So my question is, whether that opinion  
25   means that the use of some water data points from

1 the water treatment plant means that the model  
2 accurately captures the VOC losses at the water  
3 treatment plant.

4 MS. BAUGHMAN: Objection. Form;  
5 foundation.

6 THE WITNESS: My opinion is response to  
7 Hennet's opinion that losses were not accounted  
8 for. So my opinion counters Hennet's opinion  
9 that there wasn't consideration of treated water.

10 Q (BY MS. HORAN) So you're not offering  
11 any opinion about whether the VOC losses were  
12 accurately -- or the use of some data in level 4  
13 calibration means that it was done accurately or  
14 done well to include -- strike that.

15 I'm going to start over.

16 You're not offering the opinion that the  
17 use of some treated water data sample points in  
18 the level 4 calibration means that the model  
19 accurately captured the VOC losses at the water  
20 treatment plant. You're only offering the  
21 opinion that you believe they were indirectly  
22 considered.

23 MS. BAUGHMAN: Objection to form.

24 THE WITNESS: Yeah, that's my opinion.  
25 Certainly, I would say -- well, that's my



1 opinion, as stated here. I think, certainly,  
2 there was value added by doing so. That the  
3 model -- but my opinion is directed at Hennet's  
4 assessment.

5 Q (BY MS. HORAN) What do you mean there  
6 was value added by doing so?

7 A Just countering Hennet's suggestion that  
8 there was a lack in the model because it did not  
9 incorporate such data.

10 Q So -- I'm about to use another document.  
11 Would it be okay if we just take a quick break?

12 MS. BAUGHMAN: Of course.

13 THE VIDEOGRAPHER: We're off the record  
14 at 3:21 p.m.

15 (Short break from 3:21 p.m. to 3:34 p.m.)

16 THE VIDEOGRAPHER: We're back on the  
17 record at 3:34 p.m.

18 Q (BY MS. HORAN) I'm marking as  
19 Government Exhibit 12, this is the expert report  
20 of Morris Maslia, dated October 25, 2024.  
21 (Government Exhibit 12 marked for identification)

22 Q (BY MS. HORAN) And if you could turn to  
23 Page 84.

24 A 8-4?

25 Q Yes.

1           A     (Witness complies.)

2           Q     The second full paragraph reads, "the  
3     reconstructed concentrations versus the observed  
4     data in Table 7.15 and Figure 7.25 demonstrate  
5     successful level 4 calibration as the observed  
6     data from the Hadnot Point Water Treatment Plant  
7     represents a separate unique data set that has  
8     been used, assessed, the goodness of fit of the  
9     calibrated Hadnot Point Holcomb Boulevard  
10    models."

11                Do you see that?

12           A     Yes.

13           Q     And that sentence is the sentence that  
14    you pulled the quote out in your report.

15                Is that fair?

16           A     Looks right. Just to double check.

17           Q     And that was on the bottom of Page 14 of  
18    your report.

19           A     Yes.

20           Q     Having read the rest of the sentence, is  
21    it still your understanding that the data in  
22    Table 7.15 was used in calibration of the Hadnot  
23    Point Holcomb Boulevard model?

24           A     Well, maybe in terminology of  
25    calibration and validation. So I would say yes.

1 Q You can set aside Mr. Maslia's report.

2 A (Witness complies.)

3 Q If two water samples are taken  
4 simultaneously, one for raw water and one from  
5 the treated water, would the samples  
6 concentrations inform on treatment losses?

7 A Say that again.

8 Q Sure.

9 If two water samples are taken  
10 simultaneously, one is from the raw water and one  
11 is from the treated water, would the sample  
12 concentrations inform on treatment losses?

13 MS. BAUGHMAN: Object to the form.

14 THE WITNESS: Conform?

15 Q (BY MS. HORAN) Would they inform on  
16 treatment losses. Sorry.

17 MS. BAUGHMAN: Object to the form.

18 THE WITNESS: Under steady state  
19 conditions, yes.

20 Q (BY MS. HORAN) Are you familiar with  
21 the concept of a tracer sample?

22 A Define what you mean by tracer sample.  
23 I'm -- I'm familiar with the concept of tracers.

24 Q What is a tracer that you're familiar  
25 with?

1           A     Well, there are a number of different  
2     tracers. For groundwater, for analyzing the  
3     hydraulics of a system in a water treatment  
4     plant.

5           Q     Are you familiar with the concept of a  
6     tracer sample where you would identify -- create  
7     a sample in the raw water and then allow it to go  
8     through the water treatment plant and then test  
9     it again when it's through the treatment process?

10          A     Yes.

11          Q     Okay. Do you know if any tracer samples  
12     were done at Hadnot Point Water Treatment Plant?

13          A     Not to my knowledge.

14          Q     And you agree that tracer samples would  
15     inform on treatment losses at a water treatment  
16     plant?

17          A     Depends upon how you do the tracer  
18     study.

19          Q     So if you do the tracer study where you  
20     begin the tracer and the raw water and measure it  
21     and then the water goes through the water  
22     treatment plant, then you remeasure the tracer in  
23     the treated water plant reservoir, would you  
24     agree that that would inform on treatment losses?

25          A     Well, it depends upon the tracer. What

1 kind of tracer are you talking about?

2 Q What kind of tracer would you use in  
3 that type of project?

4 A That depends upon what you're trying to  
5 achieve.

6 Q You're trying to measure VOC losses.

7 A Then under steady state conditions, yes.

8 Q Why say at steady state simultaneous  
9 samples would inform on treatment losses?

10 A Say again. Why?

11 Q Sure.

12 I believe you said earlier that at  
13 steady state, simultaneous samples would inform  
14 on treatment losses.

15 Fair? Do you recall that testimony?

16 A Well, there are several things working  
17 in these questions. I guess I'm curious what  
18 you're ultimately trying to get to. Typically  
19 when we do a tracer study at a water treatment  
20 plant, we're trying to analyze the hydraulics of  
21 a basin, and so we would introduce something like  
22 chloride, and we would put it in and we'd measure  
23 it coming out and that would tell us something  
24 about how ideal the reactor is.

25 What you seem to be talking about is

1 putting in a volatile chemical at the inlet and  
2 then measuring its concentration.

3 Q So you -- the -- the measurement would  
4 be the VOCs. I'm not offering any opinion on  
5 what substance you would add to become the  
6 tracer.

7 A Okay. Now, what I mean by steady state  
8 is you have a constant flow coming in, you have a  
9 constant operating process, and you have a  
10 constant flow going out. And so you have a  
11 steady of concentration of chemical in the inlet  
12 and then you have a steady concentration coming  
13 out the other side and then you can do a  
14 comparison.

15 But if you're introducing something and  
16 it's being diluted and it's going through other  
17 processes, it's not yet at steady state with the  
18 system, then that wouldn't give you the same  
19 information.

20 Q So your steady state assumes that the  
21 levels of contaminants of VOCs would be coming  
22 into the water treatment plant at the same level.

23 A That you're -- you're -- relatively the  
24 -- yes. Relatively the same. You're not --  
25 you're not introducing something all at once and

1 then watching its appearance the other end.

2 Q And what if you didn't have a steady  
3 concentration of VOCs at the inlet to the water  
4 treatment plant, for example, because wells were  
5 being turned on and off?

6 MS. BAUGHMAN: Object to the form,  
7 foundation, incomplete hypothetical.

8 THE WITNESS: Yeah, it's a hypothetical.  
9 You'd have to take that into consideration.

10 Q (BY MS. HORAN) So if there was not a  
11 steady state, in other words, meaning that the  
12 VOCs were not at a constant level coming into the  
13 water treatment plant, would two samples that  
14 were taken simultaneously, one from the raw water  
15 and one for the treated water, inform on  
16 treatment losses?

17 MS. BAUGHMAN: Object to the form.  
18 Foundation.

19 THE WITNESS: Yes. Yes.

20 Q (BY MS. HORAN) So even without a steady  
21 state, the answer's yes?

22 A Well, depends upon how nonsteady state  
23 you're saying. Generally, you have -- generally,  
24 you have fairly steady state conditions. If you  
25 wouldn't want to do such a study when you per --

1     perturbated the system all at once. That  
2     wouldn't be the best time to do such an analysis.

3             Q     Do you know if the VOCs at Camp Lejeune  
4     were in a steady state?

5             MS. BAUGHMAN: Object to the form.

6             Q     (BY MS. HORAN) Entering the Hadnot  
7     Point or Tarawa --

8             THE REPORTER: Repeat.

9             MS. HORAN: Entering the Hadnot Point or  
10    Tarawa Terrace water treatment plants.

11            MS. BAUGHMAN: Object to the form.

12            THE WITNESS: I could imagine there were  
13    times when there were fluctuations, but I can  
14    imagine times when all the wells were -- when the  
15    wells were operating continuously some period of  
16    time you would approach steady state.

17            Q     (BY MS. HORAN) In your report on Page  
18    15, you point to three datasets. One on July 27,  
19    1982, and two on December 4, 1984, that show  
20    insight into the fate of VOCs at the Hadnot Point  
21    Water Treatment Plant.

22            Is that fair?

23            A     Yes.

24            Q     And you say that while admittedly a  
25    small dataset, the data provide further support



1 for the minor to negligible VOC losses, you  
2 propose.

3 Fair?

4 A Yes.

5 Q Okay. Turning to the TCE sample from  
6 December 4, 1984, do you see that in Table 5-5?

7 A Do I see that as --

8 Q Do you see it in Table 5-5?

9 A Yes.

10 Q Okay. And do you see that for the  
11 untreated water, there was 46 micrograms of TCE?

12 A Yes.

13 Q And for the treated water, there was 200  
14 micrograms of TCE?

15 A Yes.

16 Q So comparing these two data points from  
17 December 4, 1984, the treated water had over 400  
18 percent TCE of the untreated water.

19 Is that fair?

20 A In these numbers, yes. Or I mean, it's  
21 larger. Haven't done the 400 percent. But yes.

22 Q And you would agree that this is not a  
23 tracer sample?

24 A That I couldn't say.

25 Q Have you ever, in your professional

1 experience, seen a time where a water treatment  
2 plant increased a VOC concentration by about 400  
3 percent?

4 A No.

5 Q And you would agree that if you traced  
6 the 46 micrograms of TCE through the water  
7 treatment plant, the measurement would be lower  
8 as treated water.

9 Fair?

10 MS. BAUGHMAN: Objection; form,  
11 foundation.

12 THE WITNESS: I would say it would be --  
13 there's no reason to expect it to be higher. It  
14 could possibly be lower.

15 Q (BY MS. HORAN) And your calculations,  
16 if you turn to Page 14, say it would be roughly  
17 7.2 percent lower?

18 MS. BAUGHMAN: Objection to form.

19 THE WITNESS: That would be the -- yes.

20 Q (BY MS. HORAN) How does comparing the  
21 treated and untreated sample of TCE from December  
22 4th support your opinion that there were losses  
23 of 7.2 percent at the Hadnot Point Water  
24 Treatment Plant?

25 A The data informed me that there were not

1 losses. Were not occurred.

2 Q You think the Hadnot Point Water  
3 Treatment Plant did not have any losses of VOCs?

4 A The data does not suggest -- there's no  
5 data to support that there was significant  
6 losses.

7 Q Is there data to support that there were  
8 not significant losses?

9 A The data I point to here indicate that  
10 there -- there's no evidence to support  
11 significant losses. So to me, that provides  
12 evidence. It provides evidence to support the  
13 conclusion.

14 Q So -- sorry, Dr. Sabatini. Are you  
15 saying that there was 7. -- your estimate is that  
16 there would be 7.2 losses of TCE from the water  
17 treatment plants or that there would be no losses  
18 from the water treatment plants?

19 MS. BAUGHMAN: Object to the form.

20 THE WITNESS: My calculations estimate  
21 7.2 percent and the data -- these data suggest  
22 that the losses were negligible.

23 Q (BY MS. HORAN) How does 46 micrograms  
24 of TCE in the untreated water and 200 micrograms  
25 of TCE in the treated water suggest that the

1 losses were negligible?

2 A There's no indication of losses.

3 Q But you would agree that these are not  
4 tracer samples.

5 Fair?

6 MS. BAUGHMAN: Objection; form. Asked  
7 and answered three or four times.

8 Q (BY MS. HORAN) Fair? Yes?

9 A I'm sorry?

10 Q We can -- I can withdraw that question.

11 Next to the TCE numbers for December 4,  
12 1984, the third column which is reconstructed, do  
13 you see the November 1984 shows 639 micrograms of  
14 TCE in the simulated model?

15 A November of 1984?

16 Q Yeah. So the December 4, 1984, data  
17 samples that we've been talking about of TCE are  
18 compared to -- in the chart to the reconstructed  
19 model for November 1984 which had 639  
20 micrograms --

21 A Yes.

22 Q -- of TCE.

23 Do you see that?

24 A I see that in the table.

25 Q And it's your opinion that simulated

1 reconstructed values account for the water  
2 treatment losses.

3 Fair?

4 MS. BAUGHMAN: Object to the form.

5 THE WITNESS: My opinion is that the  
6 ATSDR model did indirectly incorporate treated  
7 water samples in its analysis. That's my  
8 opinion.

9 Q Sorry. It did or did not?

10 A It did.

11 Q It did. Okay.

12 So looking -- do you know how much time  
13 it takes TCE to be out of a water treatment plant  
14 after contaminated wells stop pumping?

15 MS. BAUGHMAN: Object to the form.  
16 Foundation.

17 THE WITNESS: That's a very open-ended  
18 question.

19 Do I know?

20 Q (BY MS. HORAN) How much time it takes  
21 for TCE to leave a water treatment plant after  
22 contaminated wells stop pumping?

23 MS. BAUGHMAN: Object to the form.  
24 Object to foundation.

25 THE WITNESS: That's an open-ended

1 question. I mean, not off the top of my head,  
2 no.

3 Q (BY MS. HORAN) Would you expect it to  
4 be days or weeks or hours?

5 MS. BAUGHMAN: Same objections.  
6 Incomplete hypothetical.

7 THE WITNESS: I would have to do -- I'd  
8 have to have more information and do some  
9 calculations to make a conjecture.

10 Q (BY MS. HORAN) Have you seen any data  
11 showing how much time it takes TCE to be out of a  
12 water treatment plant after contaminated wells  
13 stop pumping?

14 MS. BAUGHMAN: Objection, form.  
15 Objection, foundation. Incomplete hypothetical.

16 THE WITNESS: Same -- same response as  
17 before.

18 Q (BY MS. HORAN) I just asked if you've  
19 seen any data on it.

20 MS. BAUGHMAN: Same objections.

21 THE WITNESS: No.

22 Q (BY MS. HORAN) Agree that when a  
23 contaminated well stops pumping, the percentage  
24 of water from that well will gradually decrease  
25 in the raw, untreated reservoirs?

1           A     Say that one more time.  Lots of  
2     hypotheticals here.

3           Q     When a contaminated well stops pumping,  
4     the percentage of water from that well will  
5     gradually decrease in the raw, untreated  
6     reservoirs; correct?

7           A     Sure.

8           Q     Turning to Tarawa Terrace.  On Page 16  
9     of your report, the last sentence of the first  
10    full paragraph reads, "once again, the fact that  
11    Tarawa Terrace level 4 calibration included  
12    treated water samples demonstrates the ATSDR  
13    indirectly considered losses during water  
14    treatment and distribution."

15                Did I read that correctly?

16           A     Yes.

17           Q     And if you could turn back to  
18    Mr. Maslia's report which has been marked as  
19    Exhibit 12.  And turning to Page 60.

20           A     6-0?

21           Q     Yes.

22                You see at Table 7.12 that says,  
23    "Computed and observed tetrachloroethylene  
24    concentrations in water samples collected at the  
25    Tarawa Terrace Water Treatment Plant and

1 calibration target range."

2 A Yes.

3 Q So I believe your report -- and you're  
4 welcome to look at it again -- identifies one set  
5 of data from July 28th that has raw untreated  
6 water.

7 One second.

8 A Yes.

9 Q Okay. Other than the one dataset you've  
10 identified in your report from July 28, 1982, can  
11 you tell if there was -- or do you know if any of  
12 the other data points in 7.12 are of treated  
13 water?

14 A I -- it may be -- I think the March 12,  
15 1985, has a denotion of upstream and downstream  
16 of water treatment plant.

17 Q Sorry. Which date?

18 A What was the question again?

19 Q Yeah. Can you tell which of these  
20 samples were -- other than the one you've  
21 identified through using CLW 606, were from  
22 upstream and downstream? And you're saying --  
23 did you say -- I just missed the date.

24 A So those were the two that I used  
25 comparison.



1 Q Uh-huh.

2 A And then the text.

3 Q Okay. And you point to the July 28,  
4 1982, when the raw water was 76 micrograms and  
5 the treated water was 82 micrograms as supporting  
6 your opinion that the water treatment process  
7 would produce minor VOC losses.

8 A Yes.

9 Q How does an increase in PCE in the  
10 treated water show that there would be minor VOC  
11 losses at the Tarawa Terrace Water Treatment  
12 Plant?

13 A Similar to the discussion before that  
14 indicated -- did not indicate losses. There was  
15 not evidence of losses.

16 Q So it's your opinion that if upstream  
17 water has higher VOCs than downstream water, it's  
18 indicative that there are minor losses in a water  
19 treatment plant?

20 A Say upstream and downstream.

21 Q Sure. If there's -- if the -- the  
22 finish water and the water -- the treated water  
23 has higher micrograms of PCE than the untreated  
24 water, --

25 A Yes.

1           Q     -- it's your opinion that that's  
2     indicative that there are minor losses at the  
3     water treatment plant?

4           A     It does not -- certainly does not  
5     suggest that there were losses.

6           Q     Do you know what percentage of water in  
7     the raw, untreated water samples at Tarawa  
8     Terrace on July 28, 1982, came from supply well  
9     Tarawa Terrace 26?

10           MS. BAUGHMAN:  Objection, form and  
11     foundation.

12           THE WITNESS:  Not off the top of my  
13     head.  I'd have to look at records.

14           Q     (BY MS. HORAN)  What records would you  
15     look at to determine that?

16           A     I'd have to study back through the  
17     reports.

18           Q     Do you know if it was the same  
19     percentage of Tarawa Terrace 26?

20           MS. BAUGHMAN:  Objection, form.

21           THE WITNESS:  At this point, I don't  
22     know.

23           Q     (BY MS. HORAN)  Do you still have  
24     Mr. Maslia's report in front of you?

25           A     Yes.

1 Q Okay. Great.

2 A I'm remembering now as well there was a  
3 COW where -- of Camp Lejeune Water Treatment  
4 Plant person commented on levels being very  
5 similar on either side of the water treatment  
6 plant.

7 I'm sorry. That's -- that -- I'm sorry.  
8 Go ahead.

9 Q Was that a document that you saw prior  
10 to submitting your expert report, or was that  
11 after you submitted your expert report?

12 MS. BAUGHMAN: If you remember.

13 THE WITNESS: I don't recall.

14 MS. HORAN: Thank you, Laura, but please  
15 keep it to form and foundation.

16 Q (BY MS. HORAN) Do you know the primary  
17 source of PCE at Tarawa Terrace? Do you know  
18 which well it was?

19 MS. BAUGHMAN: Objection, form and  
20 foundation. Outside the scope.

21 THE WITNESS: In my general background  
22 reading, I saw the dry cleaner and there were I  
23 think three different wells that were  
24 contaminated, but I don't remember the numbers.

25 Q (BY MS. HORAN) Looking at Table 7.12 in

1 Maslia's report on Page 60. The day that you  
2 compare the two samples, so July 28, 1982, the  
3 simulated value that's compared to that is 112  
4 micrograms.

5 Is that fair?

6 A That's what the table says.

7 Q If you could turn to page 59.

8 A (Witness complies.)

9 Q Do you -- the first sentence of the last  
10 full paragraph reads, "the results shown in  
11 Figure 7.13 and Table 7.12 represent the  
12 calibrated model being compared to a separate  
13 dataset than that used for the calibration of the  
14 model, Figure 7.14."

15 Do you see that sentence?

16 A Yes.

17 Q You agree that the observed data in  
18 table 7.12 was not used for calibration of the  
19 Tarawa Terrace Water Treatment Plant?

20 A 7.13. I'm going back and looking at  
21 the --

22 Q Go ahead. Yeah. Take your time.

23 A So appears to me there's a calibration  
24 validation aspect to this which are both part of  
25 the verification. In my understanding both part

1 of the verification process.

2 Q Your report -- you can turn back to it  
3 if needed -- talks about calibration. It doesn't  
4 talk about validation.

5 Fair?

6 A I was reusing the terminology that  
7 Maslia was using.

8 Fair.

9 Q It's fair.

10 So if you turn to your report on page  
11 16, your first paragraph indicates that the data  
12 in Table 7.12 was used to calibrate the Tarawa  
13 Terrace model.

14 A I was referring to Maslia's terminology.  
15 But calibration validation part of the  
16 verification process.

17 Q Okay. Where do you say -- strike that.

18 Your report indicates that the -- the  
19 data in Table 7.12 was used as the Tarawa Terrace  
20 level 4 calibration.

21 Fair?

22 A Relying upon Maslia's report. Yes.

23 Q And now having reviewed Maslia's report  
24 again, the -- the data in Table 7.12 was not used  
25 in the Tarawa Terrace calibration.

1 Fair?

2 MS. BAUGHMAN: Objection, form and  
3 foundation.

4 THE WITNESS: It seems to be mincing --  
5 calibration validation to me are part of the  
6 model verification process.

7 Q (BY MS. HORAN) You did not write that  
8 in your report.

9 Fair?

10 You said that the data in Table 7.12 was  
11 used for calibration. You don't talk about  
12 validation; correct?

13 A Correct.

14 Q So in your opinion on Page 16 when you  
15 said thus, for both, and it's bolded in the  
16 middle of the page -- "thus, for both the Tarawa  
17 Terrace and Hadnot Point systems, treated water  
18 samples were used in the calibration process and  
19 ATSDR did consider such losses in the treatment  
20 system."

21 Did I read that correctly?

22 A Correct.

23 Q And having now reviewed Maslia's report,  
24 data -- treated water samples were not used in  
25 the calibration process for Tarawa Terrace.

1 Fair?

2 MS. BAUGHMAN: Objection, form  
3 foundation.

4 THE WITNESS: May be a choice of  
5 terminology calibration versus validation.

6 Q (BY MS. HORAN) You understand  
7 calibration to mean the same thing as validation?

8 MS. BAUGHMAN: Objection, form.

9 THE WITNESS: I see them both as part of  
10 the model verification process.

11 Q (BY MS. HORAN) And where does Maslia in  
12 his report talk about validation -- of using this  
13 data for validation?

14 A That I -- I'd have to go back and review  
15 his reports.

16 Q Okay. So can you agree with me that the  
17 data -- the treated water samples in Table 7.12  
18 were not used to calibrate the Tarawa Terrace  
19 model?

20 MS. BAUGHMAN: Objection, form and  
21 foundation.

22 THE WITNESS: It's -- from Maslia's  
23 report, that seems -- seems to be correct.

24 Q (BY MS. HORAN) And if the Tarawa  
25 Terrace -- the ATSDR did not use treated water

1 samples to calibrate the Tarawa Terrace model,  
2 then they did not indirectly account for VOC  
3 losses during the water treatment storage and  
4 distribution.

5 MS. BAUGHMAN: Objection, form.

6 MS. HORAN: Laura, please stop shaking  
7 your head.

8 MS. BAUGHMAN: I wasn't shaking my head,  
9 for the record.

10 THE WITNESS: My opinion says -- my  
11 opinion doesn't speak to calibration.

12 Q (BY MS. HORAN) The last sentence  
13 bolded.

14 A 5.2 my opinion --

15 MS. BAUGHMAN: He wasn't finished. Can  
16 you let him finish his answer, please.

17 MS. HORAN: Sure.

18 THE WITNESS: 5.2 my opinion --

19 Q (BY MS. HORAN) Uh-huh.

20 A -- says that model indirectly counted  
21 for VOC losses and so I -- I feel like my opinion  
22 stands because they were considered.

23 Q Sure. And your opinion, too, rests upon  
24 all of your analysis for both Hadnot Point and  
25 Tarawa Terrace is -- rests on the belief that the



1 data was used in a calibration process; correct?

2 MS. BAUGHMAN: Objection, form.

3 Objection, foundation.

4 THE WITNESS: Calibration, validation to  
5 me both point to model being -- accounting for  
6 the losses.

7 Q (BY MS. HORAN) And you don't talk about  
8 validation in your expert report.

9 MS. BAUGHMAN: Objection, form. Asked  
10 and answered about five times already.

11 THE WITNESS: I was re -- I was using  
12 Maslia's terminology when he said calibration.

13 Q (BY MS. HORAN) When he said  
14 calibration, you understood that to mean  
15 calibration or validation?

16 MS. BAUGHMAN: Objection to the form.

17 THE WITNESS: Had he used the term  
18 validation, I would have been equally comfortable  
19 pointing to validation. Whether used for  
20 calibration or validation for me in either, both  
21 cases it was accounted for in the model.

22 Q (BY MS. HORAN) And you don't know  
23 sitting here today whether ATSDR used the data in  
24 Table 7.12 in the Tarawa Terrace model for  
25 validation.

1 MS. BAUGHMAN: Objection, form.

2 THE WITNESS: All I can do is refer to  
3 Maslia's report and how he used the information.

4 Q (BY MS. HORAN) Okay. I want to turn  
5 next to your opinions on water buffaloes. Final  
6 opinion.

7 A And I guess as we leave --

8 MS. BAUGHMAN: No, no. She didn't ask  
9 you a question. Okay? Unless you feel like you  
10 had to correct something.

11 THE WITNESS: Okay.

12 Q (BY MS. HORAN) You agree with  
13 Dr. Hennet that there would be additional losses  
14 from the water treatment plant as the water  
15 buffalo is filled; correct?

16 A Correct.

17 Q So I want to actually turn first to your  
18 Appendix A which is response to reports of Remy  
19 J.C. Hennet and J. Brigham regarding water  
20 buffaloes.

21 Do you have that open?

22 Why did you attach a second expert  
23 report to your original expert report instead of  
24 just submitting one?

25 MS. BAUGHMAN: Object to the form.

1           To the extent that requires  
2       conversations with counsel, I'm instructing you  
3       not to answer per the order CMO 17 that we talked  
4       about earlier.

5           THE WITNESS:   Okay.

6           Q     (BY MS. HORAN)   Can you answer that  
7       question without disclosing your conversations  
8       with counsel?

9           A     No.

10          Q     Are the opinions contained in Appendix A  
11       opinions you hold as an expert?

12          A     Yes.

13          Q     Did you write Appendix A yourself?

14          A     Yes.   It's my work product.

15          Q     And if you turn -- so if I reference  
16       Appendix A, you'll understand that I mean your  
17       water buffalo --

18          A     Yes.

19          Q     -- opinions?

20                Okay.   Appendix A has its own references  
21       list.   Sitting here today, is the references list  
22       complete, or is there anything you'd like to add?

23          A     Nothing to add.

24          Q     In forming these opinions, you did not  
25       rely on any historical books.

1                   Is that fair?

2                   MS. BAUGHMAN: Object to the form.

3                   THE WITNESS: Historical book.

4                   Q     (BY MS. HORAN) Books on history.  
5 Textbooks on history.

6                   A     No.

7                   Q     You didn't rely on any historical  
8 studies?

9                   A     No.

10                  Q     How did you go about collecting  
11 documentation to form your opinions and  
12 conclusions in Appendix A?

13                  A     I reached out to legal staff and asked  
14 to help me identify documents pertinent to this,  
15 and then synthesized the material from those  
16 documents.

17                  Q     Outside of reaching out to counsel, did  
18 you do any independent searches for documents in  
19 Google or at a library or any of that?

20                  A     The materials that I was provided was --  
21 were sufficient for me, so I didn't need to do  
22 personal, if that's what you're asking.

23                  Q     So you didn't do any additional research  
24 into documents outside of those that were  
25 provided to you by counsel.

1 Fair?

2 A Correct.

3 Q And you said that the documents you  
4 received were sufficient. How did you make that  
5 determination?

6 A They helped us to document the  
7 progression in water buffaloes over time.

8 Q Did you speak with anyone -- and I'm not  
9 asking about questions -- or conversations with  
10 counsel -- but any experts in the field or any  
11 members who have been part of the military about  
12 your opinions in Appendix A as part of your  
13 research in forming them?

14 A No.

15 Q You have received both the depositions  
16 of Mr. Hunt and Mr. Cagiano.

17 Fair?

18 A Read those. Yes.

19 Q And having read Mr. Hunt's deposition  
20 transcript, did anything jump out at you?

21 A Say again.

22 MS. BAUGHMAN: Objection. Object to the  
23 form.

24 Q (BY MS. HORAN) Having read Mr. Hunt's  
25 deposition transcript, did anything jump out at

1 you as relevant to your opinions in this case?

2 MS. BAUGHMAN: Object to the form.

3 THE WITNESS: Just -- not separate from  
4 what's in the document.

5 Q (BY MS. HORAN) So when you say the  
6 document, you mean Appendix A?

7 A Appendix A.

8 Q And when you read Mr. Cagiano's  
9 deposition transcript, did that have any impact  
10 on the opinions that you're offering in your  
11 Appendix A?

12 MS. BAUGHMAN: Object to the form.

13 THE WITNESS: No.

14 Q (BY MS. HORAN) Have you -- I'm sorry.

15 A Not beyond -- again, not beyond -- no.

16 Q Are you aware that Mr. Hunt and  
17 Mr. Cagiano have been deposed twice in this case?

18 A I believe --

19 Q You're welcome to look at your reliance  
20 list.

21 A I knew -- I knew there was a first  
22 interaction with them and then there was a  
23 deposition that followed.

24 Q Do you know if they were deposed prior  
25 to submitting your expert report?

1           A     Well, I know -- let me refer to the  
2     document.  What's it called in here?

3           Q     You're -- you're welcome to look at your  
4     reliance list which is Exhibit 3 or the reference  
5     list.  I'll represent to you I haven't seen that  
6     you've seen or reviewed their original deposition  
7     transcript from prior to submitting your report.

8           A     I know they had affidavits.

9           Q     Uh-huh.

10          A     Yes.  I know more that they -- they had  
11     affidavits before my report.

12          Q     And are you aware that they had also  
13     been deposed before your report?

14          A     I don't recall.

15          Q     And if you had those deposition  
16     transcripts, those would be on either your  
17     reliance list or your references list?

18          A     Yes.  They...

19          Q     Turning to Page 2.  The last sentence of  
20     the first full paragraph says, "based on my  
21     review of historical documentation as discussed  
22     below, I disagree in part with Drs. Hennet and  
23     Brigham regarding how water buffaloes were filled  
24     at Camp Lejeune over time.

25                 Do you see that?

1           A     Yes.

2           Q     What parts do you agree with Dr. Hennet  
3     and Brigham?

4           MS. BAUGHMAN:   Objection to the form.

5           THE WITNESS:   That they were filled.  
6     They were filled from stand pipes that -- and I  
7     have to refer back to -- I don't have Brigham's  
8     -- I remember Brigham had a number of things in  
9     his report that I agreed with.

10          Q     (BY MS. HORAN)   So you agree that they  
11     were filled via stand pipes?

12          A     Well, that was -- yes.   Stand pipes or  
13     at times suggestions was maybe fire hydrants.

14          Q     Do you have any opinion on where the  
15     stand pipes or fire hydrants that the water  
16     buffaloes were filled were located on base?

17          A     Just based on what's in the depositions  
18     and in the location to the industrial area where  
19     they said they were often filled.

20          Q     Do you understand that there are parts  
21     of the base such as Camp Johnson wherein the  
22     plaintiffs have not alleged contamination of the  
23     water treatment system?

24          A     Say that again.

25          Q     Do you understand that there are parts



1 of the base wherein the plaintiffs have not  
2 alleged that there was contamination, and one of  
3 those would be Camp Johnson.

4 Just as --

5 A I'm not aware of that.

6 Q Okay. Is your opinion in Appendix A  
7 based on any -- strike that.

8 What knowledge, skill, experience,  
9 training, or education do you have such that your  
10 review of historical documentation on water  
11 buffalo filling would assist the judge in  
12 understanding how water buffaloes were filled  
13 between 1953 and 1987?

14 MS. BAUGHMAN: Object to the form.

15 THE WITNESS: In general, as a  
16 researcher we know how to review documents and  
17 synthesize information to get a background to  
18 work from when we're proposing our research. So  
19 those skills translate into trying to develop an  
20 outline of the background of what water -- water  
21 buffaloes how they transitioned over time based  
22 upon publicly available documents.

23 Q (BY MS. HORAN) Anything else?

24 A No. I guess that would be the main  
25 thing we talked before about my interest in

1 Lincoln, in history.

2 Q You said as a researcher. Do you mean  
3 as a -- in your capacity as an engineer? Strike  
4 -- strike that.

5 You're a civil engineer; correct?

6 A Correct.

7 Q Okay. When you said researcher, did you  
8 mean researcher in your capacity as a civil  
9 engineer, or what did you mean?

10 A Specifically to the research, that would  
11 be the case. I guess to my Lincoln hobby, I've  
12 taken several courses in history and had to do  
13 historical research relative to Lincoln  
14 documents. Of course, they weren't using water  
15 buffaloes in Lincoln's time. But...

16 Q Prior to this litigation, what was your  
17 experience with water buffaloes?

18 A Virtually none.

19 Q You say virtually none. Is that -- I  
20 think you talked it earlier you might have seen a  
21 few on a base?

22 A I might have seen a few on being -- I'm  
23 sorry. Pause, pause, pause.

24 I might have seen them when working on  
25 military bases for remediation projects.

1 Q But you never saw a water buffalo when  
2 used or being filled?

3 A Not being filled, no.

4 Q Prior to this litigation, had you ever  
5 read a manual on water buffaloes?

6 A No.

7 Q Prior to this litigation had you ever  
8 read a manual on how to fill a water buffalo?

9 A No.

10 Q Are you aware that the plaintiffs have a  
11 historian expert?

12 A Yes.

13 Q Have you met Dr. Longley or spoken with  
14 him on the phone or Zoom or email?

15 A No.

16 Q Have you read his reports?

17 A Yes.

18 Q Do you recall if you read his report  
19 before or after you submitted your rebuttal  
20 report?

21 A Before.

22 Q Earlier, you mentioned -- and consistent  
23 with your report -- that water buffaloes on base  
24 can be filled via a stand pipe with a fill hose  
25 or a fire hydrant.

1           Are there any other sources where a  
2   water buffalo would be filled on base that you're  
3   aware of?

4           A     Not that I'm aware of.

5           Q     A water buffalo filled via fire hydrant  
6   would have a lower fill time; correct?

7           A     That would be the expectation.  
8   Certainly.   Yes.

9           Q     And there would be a lower fill time  
10  because of a higher flow rate there?

11          A     Correct.

12          Q     And a higher flow rate would cause more  
13  turbulence when filling the water buffalo.

14                Fair?

15          A     Expect more splashing.   I would use the  
16  word splashing.   Because, again, turbulence --  
17  laminar flow, turbulent flow, but yes.

18          Q     Splashing is the preferred term?

19          A     Not a highly technical term, but yes.

20          Q     Fair enough.

21                And the splashing when filling a water  
22  buffalo or -- strike that.

23                The increased splashing when filling a  
24  water buffalo with a higher flow rate would lead  
25  to more VOC losses.

1           Is that fair?

2           A     You'd have more surface area -- you'd  
3     have somewhat more surface area for mass  
4     transfer, so you'd expect that.  You would have  
5     less time for volatilization in the downstream  
6     flow, but splashing would potentially add some  
7     more surface area.

8           Q     I want to turn first to the M 106 model.  
9     And again, your report's in front of you.  Please  
10    reference it as needed.

11          A     What page?

12          Q     If you could turn to Page 5.

13          A     5?

14          Q     Uh-huh.

15          A     (Witness complies.)

16          Q     You agree that the M 106 -- strike that.  
17                 Throughout this next section, I might  
18     refer to a water buffalo just by its technical  
19     name like M 106 or M 107.  You'll understand when  
20     I use one of those that I'm talking about that  
21     version of the water buffalo.

22                 Fair?

23          A     Fair.

24          Q     Okay.  You agree that the m 106 has a  
25     filler hatch and strainer; correct?

1 A Correct.

2 Q And you agree that the M 106 water  
3 buffalo could be filled through the hatch and  
4 strainer?

5 A Correct. Well, the 106 has a -- looks  
6 like a hand pump that can fill through the filler  
7 hatch. Figure 2.

8 Q Uh-huh.

9 A Yes.

10 Q Yep.

11 Is there -- okay. Yeah.

12 So you agree that the water buffalo  
13 could be filled through the hatch and strainer;  
14 correct?

15 A Correct.

16 Q And you said that there was a bell hose  
17 -- a bell strainer for the M106?

18 A Inserted into the filler.

19 Q Sure.

20 Is there any reason to think that the  
21 top of the filler hatch could not open so that it  
22 could be filled from the top?

23 MS. BAUGHMAN: Objection, form.

24 THE WITNESS: Say again.

25 Q (BY MS. HORAN) Sure.

1           The -- the filler hatch for the M 106.

2           A     Yes.

3           Q     Do you agree that you could open the  
4     filler hatch and fill the water buffalo through  
5     that hatch?

6           A     As opposed to through the pump?

7           Q     Yes.

8           A     Certainly possible. I mean, it seems to  
9     be possible.

10          Q     Turning to Page 7, you see Figure 5 is  
11     the M106 filling instructions from October of  
12     1951?

13          A     On Page 7. The --

14          Q     Yeah. So what you're pointing to, but  
15     if you look at the bottom, it says Figure 5.

16          A     Okay.

17          Q     And it's the M 106 filling  
18     instructions --

19          A     Okay.

20          Q     -- for 1951.

21                 Okay. And the section that you have  
22     highlighted in your report says operation of  
23     regular equipment of water tank trailer M 106.

24                 Do you see that?

25          A     Say again.

1 Q The top --

2 A Top. Yeah.

3 Q -- of Figure 5 says operation of regular  
4 equipment of water tank trailer M 106; correct?

5 A Yes.

6 Q And right below that 32, it says 32,  
7 loading and unloading water tank.

8 Do you see that?

9 A Yes.

10 Q And you would agree that these are  
11 essentially instructions on how to fill a M 106  
12 water buffalo?

13 A Yes.

14 Q Okay. And B says loading tank from  
15 overhead free-flowing source.

16 Do you see that?

17 A Yes.

18 Q And C says loading tank from source from  
19 which water must be pumped.

20 A Yes.

21 Q Agree that for C, the M 106 water pump  
22 is attached to the filler hatch?

23 A Say again.

24 Q Yeah.

25 For instructions C.



1 A C.

2 Q Yes.

3 A Yeah. Okay.

4 Q You agree that that's instructions for  
5 the water pump which is attached to the filler  
6 hatch?

7 A Yes.

8 Q Okay. On Page 7 right below that image,  
9 the second sentence, you say the fill point moved  
10 from the manhole cover to the filler hatch with  
11 the introduction of this model when using an  
12 overhead free-flowing source.

13 Do you see that?

14 A Yes.

15 Q Okay. Could you turn to Page 15 of your  
16 report?

17 A 16?

18 Q 15.

19 A 15.

20 Q Okay. The first sentence of the first  
21 full paragraph says, the phrase of interest in  
22 the filling instructions which was used in  
23 several earlier water buffalo technical manuals  
24 is free-flowing source. A free-flowing source  
25 implies gravity fed which suggests the fill hatch

1 was never intended to be filled with a high  
2 pressure, high flow hose that was tapped into the  
3 base's water distribution system.

4 Did I read that correctly?

5 A Yes.

6 Q Okay. So a free-flowing source implies  
7 gravity fed. That's your understanding?

8 A That would be one understanding of that.  
9 Yes.

10 Q So if you turn back to Page 7.

11 A Yes.

12 Q And input that analysis into Figure 5,  
13 phrase B would read loading tank from overhead  
14 gravity fed source.

15 Fair?

16 A I'm sorry. Say that again.

17 Q Sure.

18 So I believe on Page 15, you come to the  
19 conclusion that free-flowing source means that it  
20 was gravity fed.

21 Is that fair?

22 A That's -- that's one interpretation of  
23 that term. Yes.

24 Q So if you turn back to the instructions  
25 you've identified in Figure 5.

1 A Uh-huh.

2 Q And you see Section B says loading tank  
3 from --

4 A Okay.

5 Q -- overhead free-flowing source.

6 A Yes.

7 Q So if you input your analysis into that,  
8 it would read loading tank from overhead gravity  
9 fed source.

10 A That would be one interpretation. Yes.

11 Q So what type of source is an overhead  
12 gravity fed source?

13 A Well, if you had a water tank, an  
14 elevated water tank, that would provide pressure  
15 to have overhead flow.

16 Q So if you were essentially dumping one  
17 tank into the fill hatch?

18 A If you were near the water treatment  
19 plant or near one of the water towers associated  
20 with water treatment plant, then that elevated  
21 water tank would provide free-flowing water  
22 without requiring a separate pump.

23 Q Anything else you can think of that  
24 would qualify as an overhead gravity fed source?

25 A That would be the one that would come to

1 mind. An elevated storage tank.

2 Q Have you ever seen any indication  
3 through your research that water buffaloes were  
4 filled through an overhead storage tank?

5 A Well, that's part of any distribution  
6 system. And we talked before about the water  
7 treatment plants and the different elevated water  
8 tanks. So those provide pressure to the water  
9 distribution system. And so that would be  
10 gravity fed. You pump water up into the elevated  
11 storage tank like every city has and then the  
12 water from the elevated storage tank flows by  
13 gravity through the distribution system.

14 Q So where would the hose that goes to the  
15 filler hatch be located?

16 A So you would have a water distribution  
17 line buried in the ground and the elevated  
18 storage tank would be pressurizing the water in  
19 that water distribution line. Then you would  
20 have the stand pipe tapping into that buried  
21 water distribution line coming up.

22 Q Got it.

23 So an overhead free-flowing source could  
24 be the fill pipe --

25 A Yep.

1 Q -- could be the stand pipe.

2 A Yep.

3 Q Okay. So for Figure 5, Section B, that  
4 could be how you fill it via a stand pipe.

5 A Correct.

6 Q Okay. You would agree that the M 106  
7 water loading instructions do not direct a marine  
8 to fill the water buffalo through a manhole.

9 A Correct. Do not. Correct.

10 Q Yeah.

11 Okay. On Page 7, the last paragraph,  
12 the next iteration after the M 106 was the M 107,  
13 and you agree that that had a filler hatch and  
14 strainer; correct?

15 A Correct.

16 Q And you agree that --

17 A And a manhole cover.

18 Q And a manhole cover. Fair enough.

19 You agree that the M107 could be filled  
20 via the filler hatch and strainer; correct?

21 A Could be. Yes.

22 Q If you turn to Page 14 of your report.

23 A (Witness complies.)

24 Q You see Figure 17 says August 1972 M107  
25 fill process?

1           A     Yes.

2           Q     And that above that, the text that  
3     you've written says in the August 1972 edition,  
4     which supersedes the October 1964 edition shown  
5     above, the fill process switches from being done  
6     through the filler hatch to the manhole cover as  
7     described in the text below.

8                     Do you see that sentence?

9           A     Yes.

10          Q     So it wasn't until 1972 that there was  
11     any reference to filling the water buffalo  
12     through the manhole cover, the M 107; correct?

13          A     Not -- not in terms of the manholes.  
14     No.

15          Q     If you turn to Page 15.

16          A     1-5?

17          Q     Yes.

18                     The last sentence says, in the 1972  
19     edition, the text specifically calls out that  
20     when filling through the manhole cover, a  
21     pressure pump can be used which is equivalent to  
22     water flow pressure like that's supplied by the  
23     water distribution system.

24                     Fair?

25          A     Yes.

1           Q     And you agree that prior to 1972, the  
2     water buffalo could have been filled through the  
3     filler hatch using the stand pipe.

4           A     Could have been, yes.

5                     For convenience, I imagine they might  
6     have preferred filling it through the manhole,  
7     but certainly the filler hatch was what was in  
8     the manual.

9           Q     You said for convenience, you might  
10    imagine that they would fill them through the  
11    manhole.

12                    What is that based off of?

13          A     Ease of opening the manhole, the -- if  
14    you look at that strainer, the -- would be easier  
15    to put the pipe over a big manhole than over that  
16    small filler hatch. The ability of the filler  
17    hatch to accommodate the high flows. A number of  
18    things. I could imagine.

19          Q     But you agree that the filler hatch  
20    could accommodate the pressure from the stand  
21    pipe?

22                   MS. BAUGHMAN: Objection, form.

23                   THE WITNESS: I agree that you could  
24    certainly use the stand pipe to fill through the  
25    filler hatch. I question whether that strainer

1 would allow that volume of water to come through  
2 un-- unhindered.

3 Q (BY MS. HORAN) Um.

4 A That there might be backsplashing.

5 Q Do you have any documents that suggest  
6 that prior to 1972, marines, as a matter of  
7 course -- strike that.

8 Turning to Page 21 of your report. And  
9 I think this is what you were getting at. You  
10 state at the top of it, for those M 107s earlier  
11 than 1972, it is my position that these units  
12 more likely than not would -- would have also  
13 been filled through the manhole cover.

14 Correct?

15 A That's correct. That's stated.

16 Q And that's what you were just alluding  
17 to; correct?

18 A Correct.

19 Q Okay. And your basis for that is  
20 Mr. Hunt's affidavit. The filler hatch being  
21 able -- well, strike that.

22 Number 2 says the filler hatch, as  
23 outlined in several of the manuals, is designated  
24 for free-flowing water supplies and earlier  
25 versions fed by a hand pump; correct?



1           A     Correct.

2           Q     And so we've established that the filler  
3 hatch, when it said overhead free-flowing source,  
4 meant it could be a stand pipe; correct?

5           A     Could be.   Correct.

6           Q     Okay.   And then the third point you list  
7 is that from 1968 to 1972, there were water  
8 buffaloes that could only be filled through the  
9 manhole cover.

10                  Fair?

11           A     Correct.

12           Q     Other than these three data points, is  
13 there anything else that you've relied upon in  
14 determining that marines would only have ever  
15 filled water buffaloes through the manhole cover?

16                  MS. BAUGHMAN:   Objection to the form.

17                  THE WITNESS:   It impressed me why would  
18 you fill highly treated drinking water through a  
19 strainer.   So that's what got me puzzled about  
20 that and wanted to pursue this further to see  
21 what the documentation said and see what some of  
22 the experience was.

23                  It impressed me that as in the early  
24 versions there was a hand pump.   That that was  
25 more likely used for filling from a lake or some

1 source that had debris.

2 Q (BY MS. HORAN) And you agree that the  
3 earlier versions or the versions pre 1972 do not  
4 mention filling the water buffalo through the  
5 manhole cover.

6 A That's correct.

7 Q But they do reference filling the  
8 manhole through the filler hatch.

9 Fair?

10 MS. BAUGHMAN: Objection, form.

11 THE WITNESS: Say that again.

12 Q (BY MS. HORAN) The manuals pre 1972  
13 reference filling the water buffalo through the  
14 filler hatch.

15 Fair?

16 A Correct.

17 Q Okay. In Number 1 of this, you state,  
18 on a regular basis, he, meaning Mr. Hunt,  
19 observed the filling of M107 water buffaloes and  
20 all of those he observed were filled through the  
21 manhole cover.

22 Do you see that?

23 A Yes.

24 Q Have you read Mr. Hunt's deposition?

25 A Yes.

1           Q     Are you aware that he said he saw it  
2     filled less than ten times?

3           A     I'd have to look back at my notes.  
4     (Government Exhibit 13 marked for identification)

5           Q     (BY MS. HORAN) I'm marking as Exhibit  
6     13 this is the deposition of Ernest David Hunt  
7     from March 11, 2025.

8                     Could you turn to Page 33?

9           A     Whoops. Guess I got two of them.  
10    Sorry.

11          Q     No, it's okay. Could you actually keep  
12    this one? Because it's the one with the sticker.

13          A     30 -- 33 again?

14          Q     Yes.

15                     So there's four pages on one. So I  
16    guess it's --

17          A     Yeah. I've got it.

18          Q     Okay. So beginning on line 23, it says:

19                     "QUESTION: Do you recall roughly  
20                     how many times you witnessed a  
21                     water buffalo being filled at  
22                     Camp Lejeune?"

23                     If you turn to the next page,

24                     "ANSWER: Just a few times. I  
25                     don't really -- I don't recall

1 the number.

2 "QUESTION: Would you say less  
3 than 10? Less than 20? Less  
4 than 100? Do you have any --

5 "ANSWER: Less than -- less than  
6 10."

7 A Uh-huh.

8 Q Does the fact that Mr. Hunt observed a  
9 water buffalo being filled less than ten times  
10 impact your opinion in any way that water  
11 buffaloes prior to 1972 were likely filled only  
12 through the manhole?

13 A No.

14 Q Could you turn to page 29 of the --

15 A Whoops.

16 Q Yeah. Sorry.

17 A I jumped the gun.

18 Q Page 29.

19 A 29?

20 Q Uh-huh.

21 A (Witness complies.)

22 Q So beginning on line 18, it reads:

23 "QUESTION: Okay. So this  
24 record has you starting at  
25 Camp Lejeune on March 17 of

1                   '65. And if you turn the  
2                   page around, you will see  
3                   that it has you leaving on  
4                   October 7th of '66.

5                   "ANSWER: Correct.

6                   "QUESTION: Does this sound  
7                   about right to you?

8                   "ANSWER: Yes."

9                   And then -- Okay.

10                  And you were aware that Mr. Hunt saw  
11                  water buffaloes being filled less than ten times  
12                  between March of 1965 and October of 1966.

13                  Fair?

14                  A     Yes.

15                  Q     Does that change your conclusion in any  
16                  way, that water buffaloes prior to 1972 were  
17                  likely filled only through the manhole?

18                  A     No.

19                  Q     Could you turn to Page 8 of your report?

20                  A     8?

21                  Q     Uh-huh.

22                  A     (Witness complies.)

23                  Q     The middle of the page reads filling the  
24                  M107 A1 is still directed to be done through the  
25                  filler hatch as described in Figure 7 below.

1 Do you see that?

2 A Yes.

3 Q You agree that nothing in the loading  
4 the water tank instructions for the M 107 A1  
5 directs filling the water buffalo through a  
6 manhole cover; correct?

7 MS. BAUGHMAN: Objection, form.

8 THE WITNESS: In these guidelines,  
9 correct.

10 Q (BY MS. HORAN) You've identified Figure  
11 7 as the M 107 A1 filling instructions.

12 A Correct.

13 Q And you agree that nothing in Figure 7  
14 directs you to fill the tank through the manhole  
15 cover; correct?

16 A Correct.

17 Q Turning to Page 9, you agree that the  
18 M 149 had a filler hatch and strainer; correct?

19 A Yes.

20 Q And you agree that the M 149 could be  
21 filled through the hatch and strainer?

22 A Could be. Yes.

23 Q If you turn to Page 12 of your report.

24 A (Witness complies.)

25 Q Are you there?

1           A     Yes.

2           Q     Okay. The text in the middle of the  
3 report says, the significance of this note is  
4 that as early as December of 1968, the Army is  
5 acknowledging that the M 149 A1 was not equipped  
6 with a strainer and the use of a strainer became  
7 optional for the M 149 in cases where the  
8 strainer was damaged or found defective.

9                     Did I read that correctly?

10          A     Yes.

11          Q     Have you found any documentation that  
12 prior to December of 1968 the use of strainers in  
13 water buffaloes was optional if they were damaged  
14 or defective?

15          A     Say that again.

16          Q     Have you found any documentation that  
17 prior to December of 1968, the use of strainers  
18 in water buffaloes was optional if they were  
19 found damaged or defective?

20          A     No. Not to my knowledge. No.

21          Q     So at least from 1953 to December of  
22 1968, the manuals instructing how to load water  
23 into a water buffalo instructed filling through  
24 the filler hatch.

25                     Fair?

1 A Fair.

2 Q And from 1953 to December of 1968, the  
3 manuals instructing how to load water into a  
4 water buffalo did not mention filling a water  
5 buffalo through the manhole; correct?

6 A Correct.

7 Q On Page 9, the first -- and you can  
8 correct me if I'm wrong -- manual that I was able  
9 to identify from your report for the M1 --

10 A I'm sorry. Where? On Page 9?

11 Q Yeah. Page 9.

12 A Okay.

13 Q Just generally.

14 A Okay. I thought you were pointing to  
15 something.

16 Q Do you know when the first M149 A1  
17 became available?

18 A I would have to look back through. Off  
19 the top of my head, no, but I'd have to look back  
20 through.

21 Q So in -- on Page 9, you have Figure 10  
22 which shows both the M149 and the M149 A1, and  
23 that's attributed to June of 1971.

24 Do you agree?

25 A I'm not tracking. Trying to track what



1     you said here on the page here.

2             Q     Sorry.

3             A     You said on Page 9.

4             Q     Yeah.   So on Page 9, it says the  
5     illustration below, Figure 10.

6             A     Okay.

7             Q     Is from a manual from June of 1971.

8             A     Uh-huh.

9             Q     Fair?

10            A     Fair.

11            Q     Okay.

12            A     With and without the filler hatch.

13            Q     On Page 12, the text in the middle, the  
14     first sentence of the second paragraph says, "In  
15     1970, the M149 A1 underwent a tank design  
16     change."

17                   How did you determine that happened in  
18     1970?

19            A     I'd have to look back at my -- have to  
20     look back at my sources.   I don't recall right  
21     now.

22            Q     Okay.   Turning to Pages 19 and 20.   You  
23     identified via inventory that Camp Lejeune had  
24     M149 and M107 water buffaloes; correct?

25            A     Say again.   M --

1 Q M107 A2, M107, and then M149 water  
2 buffaloes.

3 Fair?

4 A M129.

5 Q 129?

6 A Is that what you said?

7 Q No. Sorry.

8 Okay. Figure 22 of your report  
9 identifies as part of the 1968 equipment that  
10 there were M107 and M107 A2 water buffaloes.

11 A Yes.

12 Q Fair?

13 A Okay. Yes. I misunder -- misheard you.

14 Q And then if you turn to Figure 23,  
15 you've identified that the 1999 inventory had  
16 M149 water buffaloes.

17 A Yes.

18 Q You state in -- you state in Page 20 --  
19 the second to last sentence of the first  
20 paragraph says, "This supports that the base was  
21 transitioning from M107 to the M149 A1s during  
22 the 1970s."

23 Did I read that correctly?

24 A Yes.

25 Q Did you find any documentation

1 supporting that the M149 A1 was in inventory at  
2 Camp Lejeune beyond Mr. Cagiano's affidavit?

3 A Beyond...

4 Q Sure.

5 So was there anything other than Mr.  
6 Cagiano's deposition -- excuse me, affidavit, any  
7 other documents you found supporting that Camp  
8 Lejeune transitioned from M107s to M149 A1s  
9 during the 1970s?

10 MS. BAUGHMAN: Object to the form.

11 THE WITNESS: Shows up on this  
12 inventory. What's the date on this inventory?  
13 '99. Not that I recall.

14 Q (BY MS. HORAN) In 19 -- the Figure 23,  
15 you say 19 -- from 1999. Do you see that?

16 A That's the indication.

17 Q You agree that that says M149, but does  
18 not indicate M149 A1.

19 Fair?

20 A That's correct.

21 Q For determining the fill time, you  
22 determined that it likely took between two or  
23 three minutes to fill a water buffalo.

24 Fair?

25 A Fair.

1           Q     And is that -- or that's through the  
2     manhole; correct?

3           A     Correct.

4           Q     Did you determine the fill time through  
5     the strainer?

6           A     No.

7     (Government Exhibit 14 marked for identification)

8           Q     (BY MS. HORAN) I'm marking as Exhibit  
9     14 -- this is Camp Lejeune Justice Act Litigation  
10    Rebuttal Report of Kyle Longley.

11                   And Dr. Sabatini, could you please turn  
12    to Page 23.

13          A     27?

14          Q     23.

15          A     23. I was going to say 27 is this.

16                   (Witness complies.)

17          Q     Three lines up from the bottom of that  
18    paragraph, the sentence reads, "The marines could  
19    fill the water buffaloes at Hadnot Point in 10 to  
20    20 minutes."

21                   Do you see that?

22          A     Yes.

23          Q     Do you know what source Mr. Longley was  
24    using for that position, or that statement?

25          A     Well, he -- no. He has a reference

1     there, but that seems to be for the next  
2     sentence.

3             Q     And that reference is to the Ensminger  
4     oral history?

5             A     Yeah.   Seems to be for the following  
6     sentence.

7             Q     But you disagree with Dr. Longley that  
8     it wouldn't take 10 to 20 minutes to fill a water  
9     buffalo at Hadnot Point?

10            A     Through the manhole.   Now, through the  
11     strainer -- yeah, I would envision it would take  
12     longer through the strainer because it would  
13     accept -- I imagine my professional judgment is  
14     it could not handle as fast a flow.

15            Q     So does this indicate to you that some  
16     marines filled the water buffaloes through the  
17     fill hatch?

18                   MS. BAUGHMAN:   Object to the form.

19                   THE WITNESS:    I couldn't speculate.

20            Q     (BY MS. HORAN)   You can put that aside,  
21     Dr. Sabatini.

22                   MS. HORAN:    We've been going for about  
23     an hour and a half.   Would you mind taking just a  
24     10-minute break?

25                   THE WITNESS:    Sure.   Sure.

1 THE VIDEOGRAPHER: We are off the record  
2 at 5:02 p.m.

3 (Short break from 5:02 p.m. to 5:12 p.m.)

4 THE VIDEOGRAPHER: We're back on the  
5 record at 5:12 p.m.

6 Q (BY MS. HORAN) Turning to your report,  
7 not the Appendix A, on Page 19, you show  
8 calculations for water buffaloes in Table 5.6.

9 Is that fair?

10 A Fair.

11 Q And you use the same study as Dr. Hennet  
12 to do your calculations in Table 5.6; correct?

13 A Correct.

14 Q And that's the McKone and Knezovich 1991  
15 study?

16 A Correct.

17 Q One of the edits you make to the McKone  
18 and Knezovich study is that the fall height in  
19 your opinion should be .4 meters instead of 1.6  
20 meters used in the study.

21 Is that fair?

22 A Restate that.

23 Q Sure.

24 One of the edits you make to the McKone  
25 and Knezovich study is that the fall height in

1 your opinion should be .4 meters instead of 1.6  
2 meters that they used in the study.

3 A In applying it to the water buffaloes.  
4 Correct. Not that McKone should have used .4  
5 meters.

6 Q Ah.

7 A Adjusting his results to this situation.

8 Q Sure.

9 And your proposed 75 percent reduction  
10 due to differences in fall height relies on the  
11 assumption that the fall height is directly  
12 proportional to volatile loss; correct?

13 A Correct.

14 Q And what's your basis for that  
15 assumption?

16 A Time of volatilization.

17 Q So the fall height would be directly  
18 related to the time. Fair?

19 A Correct.

20 Q Turning back to your Appendix A on Page  
21 21. Do you see Figure 24 is showing that the  
22 water buffalo is being filled from just outside  
23 the manhole cover?

24 A Meaning that the pipe -- yes.

25 Q And if you look at Figure 25, the water

1 buffalo is being filled about half a person size  
2 over the manhole.

3 Fair?

4 A Correct.

5 Q Okay. Are Figure 24 and Figure 25, in  
6 your opinion, representative of filling  
7 operations of water buffaloes at Camp Lejeune?

8 MS. BAUGHMAN: Object to the form.

9 THE WITNESS: Represented from other  
10 sites but could well be examples of what it might  
11 look like. I might also add Figure 27 to the  
12 discussion.

13 Q (BY MS. HORAN) Sure.

14 And Figure 27 shows a water buffalo  
15 being filled via fire hydrant with the fire  
16 hydrant hose just on the lip of the manhole  
17 cover.

18 Is that fair?

19 A It's hard to tell. The pipe may not be  
20 inserted. Either way.

21 Q Would -- if you turn to Figure 25, the  
22 fact that the stand pipe fill hose is at least  
23 two feet above the manhole cover, impact your  
24 calculations for fall height as done in your  
25 expert report?



1           A     Potentially.

2           Q     And how potentially would they impact  
3     your calculations?

4           A     Would be additional time for  
5     volatilization in the travel distance. I might  
6     add as another data point, Hennet's deposition,  
7     he mentioned that the filling of the water  
8     buffalo, he observed the water -- the fill pipe  
9     was near the entrance to the manhole.

10          Q     And you saw the photos from Dr. Hennet's  
11     February visit where he observed the water  
12     buffalo being filled?

13          A     I saw photos. I'm not sure -- I don't  
14     recall exactly all the -- the specifics. But  
15     yes, I saw photos.

16          Q     And you read the testimony or listened  
17     to the testimony of Dr. Hennet about his viewing  
18     of water buffaloes in the February 2025 visit.

19                 Fair?

20          A     In the February visit. Yes.

21          Q     And having seen those photos and read  
22     that testimony, does it have any impact on any of  
23     your opinions in your report?

24                 MS. BAUGHMAN: Object to the form.

25                 THE WITNESS: No.

1           Q     (BY MS. HORAN)   Turning back to your  
2     report on Page 19.   Row 3 says assuming downward  
3     velocities are the same.

4                     Do you see that?

5           A     Yes.

6           Q     What did you mean by that?

7           A     I assume that the -- I assume that the  
8     shower experiments translated to the water  
9     buffalo filling except the only -- the only  
10    adjustment that was necessary was the, I'll say  
11    fall height distance.   I don't want to confuse  
12    fall height with fall height from the spiractor.

13          Q     A lot of fall heights today.

14                     Does a vertical strainer spread the  
15    water more efficiently compared to a showerhead?

16          A     Oh, that's -- it could go either way.

17          Q     And why could it go either way?

18          A     I mean, it's -- that's speculation.  
19    Showerhead has tiny nozzles that direct the water  
20    intentionally out.   Where as a strainer is just  
21    there to remove debris.   The openings in the  
22    strainer grid coarser than the fine orifices in  
23    the showerhead.

24          Q     Have you seen a strainer from a water  
25    buffalo in person?

1 A No.

2 Q Have you seen a water buffalo in person?

3 MS. BAUGHMAN: Objection. Asked and  
4 answered.

5 THE WITNESS: Yeah, no.

6 MS. HORAN: Okay.

7 A I've answered that before, but no.

8 Q (BY MS. HORAN) Could you turn to Page 6  
9 of your Appendix?

10 A (Witness complies.)

11 Q Do you see Figure 4? And you've  
12 highlighted Number 22.

13 A Yes.

14 Q Which is the strainer element.

15 A Yes.

16 Q And you would say that that strainer  
17 element has holes, more or less than a  
18 showerhead?

19 A I'm sorry. Would --

20 Q Does the strainer in Figure 2 -  
21 identified as 22 in Figure 4 have more or less  
22 holes --

23 A Holes.

24 Q -- than a showerhead.

25 A I would say more.

1 Q Would you agree that the strainer would  
2 have a larger spray pattern than a showerhead?

3 MS. BAUGHMAN: Object to the form.

4 THE WITNESS: No.

5 Q (BY MS. HORAN) Why not?

6 A No.

7 Q Yeah. Why -- why not?

8 A Why not? The -- well, it even says here  
9 this is to remove sediment. So I -- just my  
10 professional judgment would be that it would not.

11 Q So if you attach a fill hose to the  
12 strainer on 22, wouldn't water come out of the  
13 strainer holes throughout the entire strainer, as  
14 long as it's not submerged?

15 A Yes.

16 Q And so the strainer holes at the top,  
17 the water will come out and go all the way to the  
18 bottom or wherever the filling process is in the  
19 water buffalo.

20 Fair?

21 A Fair.

22 Q And so it would be more efficient at  
23 volatilization of TCE than assumed in your  
24 calculations, so long as the strainer was not  
25 submerged.

1 Fair?

2 MS. BAUGHMAN: Objection to the form.  
3 Foundation.

4 THE WITNESS: It's an interesting  
5 argument. I just followed Hennet's approach. I  
6 didn't adjust -- I didn't adjust the spray  
7 diameter from what Hennet used.

8 Q (BY MS. HORAN) But you --

9 A For filling through the strainer.

10 MS. HORAN: Could you repeat my  
11 question?

12 THE REPORTER: "And so it would be more  
13 efficient at volatilization of TCE than assumed  
14 in your calculations, so long as the strainer was  
15 not submerged."

16 MS. BAUGHMAN: Objection to form.

17 THE WITNESS: I didn't do calculations.  
18 The only adjustment I made was for the time not  
19 for spray or -- I assumed the same spray pattern  
20 that Hennet did in the filler hatch calculation.

21 Q (BY MS. HORAN) So sitting here today,  
22 you don't have any opinion on whether the  
23 strainer in a water buffalo would be more  
24 efficient at volatilization of TCE than assumed  
25 in your report?

1 MS. BAUGHMAN: Object to the form.

2 THE WITNESS: I would say that I  
3 followed the same approach that Hennet followed.

4 Q (BY MS. HORAN) Did you do any analysis  
5 to determine whether the -- strike that.

6 Assuming that the water strainer would  
7 have a larger spray pattern than a showerhead, it  
8 would have a higher -- greater volatilization  
9 because of a greater surface air between --  
10 greater surface area between the air and the  
11 water.

12 MS. BAUGHMAN: Object to the form.

13 THE WITNESS: That's speculative. I  
14 wouldn't care to comment on not seeing data or  
15 evidence. And again, I'll just refer back to, I  
16 followed the same approach that Hennet did  
17 relative to the strainer. Just adjusting for  
18 time.

19 Q (BY MS. HORAN) In your report, you then  
20 switch to talking about filling through the  
21 manhole cover, which begins on Page 20 of your  
22 report. Prior to issuing your opinion, you had  
23 watched a YouTube video where water buffaloes  
24 were filled correct?

25 A Say that again.

1           Q     Prior to issuing your rebuttal report,  
2     you had watched a YouTube video where water  
3     buffaloes were being filled; correct?

4           A     Yes.

5           Q     And the video showed splashing and  
6     aeration while the water buffalo was being  
7     filled.

8                     Fair?

9           A     Yes.

10          Q     And volatilization losses happen  
11     relatively more in the presence of splashing and  
12     aeration.

13                     Fair?

14                     MS. BAUGHMAN: Object to the form.

15                     THE WITNESS: Depends upon the degree of  
16     splashing. It's surface area again. So if the  
17     splashing creates some additional surface area,  
18     there's additional possibility for  
19     volatilization.

20          Q     (BY MS. HORAN) An increase in surface  
21     area between the air and water will increase  
22     volatilization; correct?

23          A     Correct.

24          Q     After you determine --

25          A     Maybe just add one point to that. The

1 shower hitting the floor would cause splashing.  
2 And so there's a degree of the splashing that  
3 you're describing that was inherent in the shower  
4 experiment that I was working from.

5 Q And did you take that into consideration  
6 in your analysis in any way other than following  
7 McKone?

8 A That, to me, helped account for  
9 splashing that might have occurred filling  
10 through the manhole.

11 Q Was there any analysis that you did to  
12 compare the splashing in a manhole with the  
13 splashing accounted for in the shower experiment?

14 A No.

15 Q Do you know if there's more or less  
16 splashing in filling a water buffalo through the  
17 manhole than in a shower?

18 A I would have to assess that. But I  
19 would -- you have certain amount of water hitting  
20 the floor and agitating. So I couldn't comment  
21 on the relative amount, but I would consider them  
22 in the same category.

23 Q But you haven't done an assessment of  
24 that yet?

25 A No. No.



1           Q     When you determined that a water buffalo  
2     was filled through the manhole, did you do any  
3     analysis to determine if the shower is still the  
4     most apt analogy?

5           A     Whether the shower was --

6           Q     Still the most appropriate analogy.

7           A     I did look for other approaches. But I  
8     found that -- in my searching, I found that  
9     Hennet's approach was -- I could adjust that  
10    approach.

11          Q     What other approaches did you look into?

12          A     I looked for -- from a faucet. And then  
13    the kitchen is one example that I looked at.

14          Q     Can you remember any other things you  
15    looked at, sitting here today?

16          A     Well, I mean, I searched. I searched --  
17    so anything that I could have found that would  
18    have been similar to a faucet, a bath tub or  
19    something of that nature.

20          Q     Would you agree that filling a water  
21    buffalo through the manhole cover is more similar  
22    to a bath tub?

23                MS. BAUGHMAN: Object to the form.

24                THE WITNESS: I think the -- I mean what  
25    I had to work on, I was responding to Hennet's

1 report. And so I adapted his approach for the  
2 situation at hand.

3 Q (BY MS. HORAN) Sure.

4 And you determined -- you introduced  
5 some new facts. And I'm wondering if when you  
6 introduced those new facts, that changed any  
7 analysis in where you determined that a --  
8 filling a water buffalo is more similar --  
9 through the manhole -- is more similar to filling  
10 a bath tub than a shower.

11 MS. BAUGHMAN: Object to the form.

12 THE WITNESS: That would be speculation.

13 Q (BY MS. HORAN) Well, no. I'm asking if  
14 you considered it.

15 A Well, yeah, I mean I'd just have to  
16 speculate. There's -- you could see similarities  
17 and differences. But in the absence of being  
18 able to find such an approach, I went with the --  
19 I -- I adapted to Hennet's approach.

20 Q Do you know whether the EPA has ever  
21 studied VOC losses through filling a bath tub?

22 MS. BAUGHMAN: Object to the form.  
23 Foundation.

24 THE WITNESS: Not to my knowledge. I  
25 wasn't -- I did a search and wasn't able to find

1 such information.

2 Q (BY MS. HORAN) What in your model  
3 accounts for the splashing of the water and the  
4 general movement of the water --

5 A Agitation.

6 Q Agitation.

7 -- when you fill through the manhole?

8 A I'll refer back to the shower -- two  
9 things. The shower water hitting the floor and  
10 -- that agitation. I also included a -- in my  
11 Table 20 -- on Page 22.

12 Q Uh-huh.

13 A I introduced a line 4 which Hennet did  
14 not include in his analysis. Losses doing daily  
15 use of the water buffaloes. And so that was an  
16 attempt to account for additional losses. In an  
17 attempt to be conservative.

18 Q Anything else? Any other way you  
19 accounted for splashing and agitation?

20 A Just those two factors.

21 Q I believe you said earlier that you  
22 thought that the fact that a strainer on a water  
23 buffalo intended to remove sediment would be  
24 consistent with the strainer holes being smaller  
25 than a shower.

1           A     Say again.

2           Q     I -- earlier, you testified that it was  
3     your understanding that the strainer in a water  
4     buffalo would be used to remove sediment.

5                     Do you recall that?

6           A     I was -- actually referring to that in  
7     that one caption. It says sediment removal.

8           Q     And what impact would that have on the  
9     size of the holes compared to a shower? Would  
10    they be larger or smaller?

11          A     Size of a hose compared to a shower.  
12    I'm not sure I understand the relationship.

13          Q     Sure.

14                     So if you have a strainer that's  
15    designed to filter out sediment, would you expect  
16    the holes in the strainer to be larger or smaller  
17    than those in a showerhead?

18          A     It would depend upon what size of  
19    sediment was being removed. I could see it going  
20    either way. I'd have to -- I'd have to see a --  
21    a strainer.

22          Q     Do you know what sediment would have  
23    been removed from the water buffaloes strainer?

24          A     I could imagine that it was -- no, I  
25    don't. But I could imagine, if you're filling

1 from a lake or a pond, you're trying to remove  
2 sediment from that water source would be my  
3 impression.

4 Q And if you're removing sediment from a  
5 lake or a pond, would the strainer holes be  
6 larger or smaller than those in a showerhead?

7 A I could see that going either way. I  
8 could see a case where it might be smaller and I  
9 could see a case where it might be larger. The  
10 smaller it is, the harder it would be for the  
11 water to get through the strainer. So as the  
12 holes get -- the holes, or I would say grid, in  
13 the strainer get smaller and smaller, create more  
14 and more resistance of water flow and would be  
15 harder to fill through that strainer.

16 Q And the smaller the holes, the larger  
17 the surface area of the water going through it?

18 A Could be.

19 Q You state that the higher velocity  
20 during filling via the manhole leads to 33  
21 percent less volatilization due to less time  
22 falling from the pipe.

23 Fair?

24 A You're referring to my calculations?

25 Q Yes.

1           A     That -- that adds to the fall height and  
2     the -- yes. Can you restate the question?

3           Q     Sure.

4                     You state that a higher velocity during  
5     filling via the manhole will lead to a 33 percent  
6     less volatilization due to less time falling from  
7     the pipe.

8           A     We're talking through the manhole now?

9           Q     Uh-huh.

10          A     And you're referring to my calculations?

11          Q     Correct.

12          A     I think the 33 -- it's a combination of  
13     the spray diameter and the time the fall -- the  
14     time for volatilization.

15          Q     A higher velocity would also create more  
16     aeration upon impact.

17                     Fair?

18          A     And that comes back to the analogy of  
19     the shower experiment where the water hitting the  
20     floor of the shower would cause splashing.

21          Q     If a water buffalo was used for more  
22     than one day in the field, would the loss of TCE  
23     be higher than you estimated for half a day or  
24     one day?

25                     MS. BAUGHMAN: Object to the form.

1           THE WITNESS: That's speculative. So  
2 again, if it was used for...

3           Q     (BY MS. HORAN) More than one day.

4           A     That could increase volatilization.

5           Q     Did you account for temperature changes  
6 of the water and air in the water buffaloes?

7           A     I assume that could go both ways. Lower  
8 temperatures would have one effect; higher  
9 temperatures would have another effect.

10          Q     So did you account for it in your model?

11          A     I assumed that that evened out because  
12 it could go both ways.

13          Q     Earlier, you recall we were talking  
14 about calibration and validation of the model  
15 with your Opinion 2. Is it your understanding  
16 that calibration and validation are synonymous?

17               MS. BAUGHMAN: Object to the form.

18          THE WITNESS: I'd have to defer to the  
19 -- I'd have to defer to the experts in that area.  
20 The people that were doing that part of the work.  
21 That was not my focus.

22          Q     (BY MS. HORAN) You've read Dr.  
23 Konikow's expert report and his deposition?

24          A     Yes.

25          Q     Do you agree with Dr. Konikow that a

1 model cannot be validated?

2 MS. BAUGHMAN: Object to the form.  
3 Foundation.

4 THE WITNESS: I'd have to review the  
5 context of his report and -- to see what you're  
6 referring to.

7 Q (BY MS. HORAN) Isn't it the case that  
8 calibration validation of a model are distinct  
9 processes?

10 MS. BAUGHMAN: Object to the form. Lack  
11 of foundation.

12 THE WITNESS: Again, I'd have to defer  
13 to those that focused on that aspect of the  
14 project.

15 Q (BY MS. HORAN) Have you ever calibrated  
16 or validated a model?

17 A Define model. Yes, I have. But -- in  
18 my experimental work, we develop models and we  
19 validate them.

20 Q If you defer to the experts such as Mr.  
21 Maslia, then you would agree that Tarawa Terrace  
22 wasn't calibrated with treated water samples.

23 Fair?

24 MS. BAUGHMAN: Object to the form.  
25 Foundation.



1 THE WITNESS: I'm sorry. I keep asking  
2 you to repeat questions. Please, one more time.

3 Q (BY MS. HORAN) Sure.

4 If you defer to the experts, as you've  
5 stated, then you would agree that Tarawa Terrace  
6 wasn't calibrated with treated water samples.

7 A No, I would not agree with that  
8 statement.

9 Q Do you recall looking at Mr. Maslia's  
10 report earlier today? We looked at Mr. Maslia's  
11 report earlier today in regards to Tarawa  
12 Terrace. It stated that the model was not  
13 calibrated using the treated water samples;  
14 correct?

15 A I'm not in a position to comment on  
16 calibration validation. I defer to those that  
17 were focused on that aspect of the project.

18 Q Sure.

19 And if you were incorrect and the Tarawa  
20 Terrace model by ATSDR was not calibrated using  
21 treated water samples, then the ATSDR model for  
22 Tarawa Terrace would not indirectly account for  
23 VOC losses at the water treatment plant.

24 MS. BAUGHMAN: Object to the form.  
25 Foundation and asked and answered.

1 THE WITNESS: Yes. I agree.

2 Q (BY MS. HORAN) Earlier in this  
3 deposition, you stated that you had seen the  
4 photos from Dr. Hennet's visit and read  
5 deposition testimony about his February 2025  
6 visit.

7 Do you recall that?

8 A I read his deposition. That included  
9 discussion about that visit.

10 Q And part of that was Dr. Hennet's  
11 measurement of the Hadnot Point spiractor.

12 Fair?

13 A Correct.

14 Q And you understood Dr. Hennet's  
15 measurements of the spiractor that he conducted  
16 in February 2025?

17 MS. BAUGHMAN: Objection to form and  
18 foundation.

19 THE WITNESS: Yeah, it's -- there wasn't  
20 documentation to his pictures. So I can't say  
21 that I fully under -- that I understood what  
22 exactly was done.

23 Q (BY MS. HORAN) So through his photos  
24 and testimony, you were not able to fully  
25 understand how Dr. Hennet measured the spiractor

1 at Hadnot Point?

2 A No. I will comment that it was an  
3 empty, non-operating -- no chance to see the  
4 constricted water reducing the fall height. So  
5 to me, the AH photos that incorporate those are  
6 -- are valuable.

7 Q And sitting here today, do you have any  
8 methodology that you could use to measure a  
9 spiractor fall height while the spiractor is in  
10 use?

11 MS. BAUGHMAN: Object to the form.

12 THE WITNESS: I have no question that it  
13 could be done.

14 Q (BY MS. HORAN) Do you know how to do  
15 it?

16 A I can't say -- I can't say how exactly I  
17 would do it, but given time and resources, it  
18 could be done.

19 Q During the breaks today, have you spoken  
20 with counsel about any substance related to your  
21 testimony?

22 A Just a reminder to let you finish a  
23 question, to pause. So we had discussions in  
24 that nature.

25 Q Anything else related to the substance

1 of your testimony?

2 A Nothing substantive. Just the  
3 procedural-type issues.

4 Q Okay. Dr. Sabatini, thank you very much  
5 for your time today.

6 A Thank you.

7 MS. HORAN: I will pass the witness.

8 MS. BAUGHMAN: And how much time's left?

9 THE VIDEOGRAPHER: We are at six hours  
10 and 58 minutes.

11 EXAMINATION

12 BY MS. BAUGHMAN:

13 Q Dr. Sabatini, I have some questions for  
14 you. Okay. First, let's -- let's talk about  
15 Exhibit 3. If you can pull that up. Pull that  
16 from your materials.

17 A Say again.

18 Q Exhibit 3. That's the supplemental and  
19 amended materials considered list.

20 A One. Got them mixed up. This one.

21 Q Okay. All right. Did you prepare the  
22 supplemental/amended materials considered list  
23 dated April 9, 2025?

24 A Legal staff prepared this for me.

25 Q Okay. I want to -- turn, please, to

1 Page 9 where it says, additional materials  
2 considered.

3 A (Witness complies.)

4 Q Okay. Now, turn -- well, first of all,  
5 I just want you to look at the volume, or the  
6 number of documents, from Page 9 to Page 30.  
7 Just flip through.

8 A Okay.

9 Q Did you review this volume or this  
10 number of new documents between the time that you  
11 signed your report on January 14, 2025 and to  
12 April 9, 2025?

13 A No.

14 Q Okay. In that timeframe, from after you  
15 signed your report January 4 -- 14, 2025 until  
16 today, can you identify new documents that you  
17 reviewed that you had not reviewed prior to  
18 finalizing and signing your report?

19 A I think there was just the CLW  
20 mentioned. Other than -- other than maybe a CLW,  
21 no.

22 Q Okay. Well, you -- to be fair, there  
23 are depositions that didn't exist before.

24 A I'm sorry. I'm sorry.

25 Q And you reviewed those depositions;

1 right?

2 A Yes. Yes. I'm sorry. Yes. Yes.

3 Q So other than the depositions that  
4 didn't exist before January 14, 2025 and a CLW  
5 document that you've referenced, can you think of  
6 any other document you reviewed after signing  
7 your report that's new?

8 A No. Not to my recollection. No.

9 Q Okay. Do you know why there's this --  
10 and especially, the number of Bates-stamped  
11 documents -- do you know why there's so many  
12 documents from Page 9 to Page 30 of Exhibit 3?

13 MS. HORAN: Objection. Foundation.

14 THE WITNESS: Background information  
15 that did not play into my rebuttal report. Much  
16 -- much of it.

17 Q (BY MS. BAUGHMAN) Okay. So to the best  
18 of your knowledge, other than the one CLW  
19 document and the depositions that have been taken  
20 after January 14, 2025, are there any new  
21 documents that you're relying on for your  
22 rebuttal report that you reviewed after signing  
23 your report?

24 A No.

25 Q Okay. Just to refresh your

1 recollection. December 9, 2024. That's the date  
2 of Dr. Hennet's report. And the date of your  
3 report is January 14, 2025. In that timeframe,  
4 is there a reason why you did not request to go  
5 to Camp Lejeune for a site visit?

6 A I felt we -- with the AH report and  
7 Hennet's report, I had the data, the information  
8 I needed to make my assessment, my calculations.  
9 And I actually -- the AH values from 2004 were  
10 meaningful to me. Felt they were more relevant  
11 than anything I might see in 2025.

12 Q Why is that?

13 A Just more representative of what was  
14 there in -- decades ago. They also operating --  
15 show the spiractor in operation which is  
16 important in terms of the fall height.

17 Q Being AH did that?

18 A Yes.

19 Q Okay. All right. We'll get to that in  
20 a few minutes.

21 Can you pull out -- can you pull out  
22 Exhibit 7 for me?

23 A 7?

24 Q Yes.

25 A Okay.

1           Q     So if you remember, defense counsel  
2     asked you a question about a vent --

3           A     Yes.

4           Q     -- on the -- the water buffalo --

5           A     Correct.

6           Q     -- using that document.

7                     Does this vent that's on the water  
8     buffalo change your calculations and opinions  
9     regarding volatilization from the water  
10    buffaloes?

11          A     No.

12          Q     Why not?

13          A     This is similar to the -- if you will,  
14     this is similar to the vents on the reservoirs at  
15     the water treatment plant. Allows water to  
16     escape as water is filled up -- air to escape as  
17     water is filled up to the valves. Air to --  
18     prevents pressurization in the vessel.

19          Q     What affect would it have to  
20     volatilization?

21          A     It would -- it's not -- there's not --  
22     causing air to flow over the water in a way that  
23     would increase volatilization.

24          Q     Okay. You made a statement earlier  
25     today in response to defense counsel's questions.



1 You said something like, given an ultimate amount  
2 of time, VOCs leave water.

3 Do you recall saying that?

4 A Yes.

5 MS. HORAN: Objection to form.

6 Q (BY MS. BAUGHMAN) What do you mean by  
7 "ultimate amount of time"?

8 A An extreme amount of time much, much  
9 greater than what's practical in a water  
10 treatment plant reservoir.

11 Q So both you and Dr. Hennet used --  
12 what's the name of the -- the calculation that  
13 you used? Here.

14 A For the -- the fall height or --

15 Q No, no. Here. The volatilization from  
16 water. It's in Thomas.

17 A Thomas.

18 Q Okay. If VOCs leave water just from  
19 having -- from being exposed to air, why is the  
20 Thomas method necessary?

21 A Henry's law calculates -- tells us where  
22 it would happen at equilibrium, but we're often  
23 far from equilibrium in practice. And so the  
24 whole reason that AH and Hennet used the Thomas  
25 method is to recognize that in practical

1 applications, we're often far from equilibrium  
2 and so we have to use a kinetic-based model to  
3 account for volatilization.

4 Q Okay. So if you look at Exhibit 9, if  
5 you could turn to Table 15-3.

6 MS. HORAN: What page is that?

7 THE WITNESS: Say again.

8 Q (BY MS. BAUGHMAN) Table 15-3.

9 A Okay.

10 Q It's the same table defense counsel  
11 asked you about in her questions.

12 A Okay.

13 MS. HORAN: Think it's on Page 15-20.

14 THE WITNESS: Page 15-20.

15 Q (BY MS. BAUGHMAN) And do you recall  
16 that you were asked a number of questions about  
17 the fact that Dr. Hennet used .008 --

18 A Yes.

19 Q -- for the oxygen reaeration  
20 coefficient? Correct?

21 A Correct.

22 Q Look at -- under river. What's the  
23 first literature value reported for an oxygen  
24 aeration coefficient for river?

25 A 0.008.

1 Q The same one that -- used by Dr. Hennet?

2 A Yeah.

3 Q Okay. I want to ask you a few questions  
4 about recarbonation basins. There's a  
5 recarbonation basin at Hadnot Point; is that  
6 correct?

7 A Yes.

8 Q Actually, let's look at the schematic  
9 that you have in your report. Make sure we're  
10 talking about the same thing. Okay.

11 MS. HORAN: What page?

12 Q (BY MS. BAUGHMAN) If you could turn to  
13 Page 3, Figure 3-1.

14 A (Witness complies.) Yes.

15 Q Okay. So Figure 3-1, Hadnot Point water  
16 treatment plant in your report, you took that  
17 from AH Environmental report; is that right?

18 A Correct.

19 Q Okay. And it shows the recarbonation  
20 basin after the spiractors; correct?

21 A Correct.

22 MS. HORAN: Objection to the form.

23 Q (BY MS. BAUGHMAN) Okay. Was the  
24 recarbonation basin operating in 2025?

25 MS. HORAN: Objection to form.

1 Foundation.

2 THE WITNESS: No.

3 Q (BY MS. BAUGHMAN) How do you know that?

4 A Not to my knowledge. No.

5 Q How do you know that?

6 A That's the indication -- I'm sorry. In  
7 20- --

8 Q '25.

9 A Yeah. To my knowledge, no.

10 Q Okay. What about in 2004, when AH  
11 Environmental was out investigating and seeing --  
12 making site visits to the Hadnot Point water  
13 treatment plant? Was the recarbonation basin  
14 operating?

15 A According to the report --

16 MS. HORAN: Objection to the form;  
17 foundation.

18 THE WITNESS: According to the report,  
19 no.

20 Q (BY MS. BAUGHMAN) Okay. Since we got  
21 the objection, let's turn to the AH Environmental  
22 report. It's attached to your report. And if  
23 you could turn to Page 2-8.

24 A 2-8. (Witness complies.)

25 Q Read the first sentence on 2-8, please.

1           A     "At some unknown time in the past  
2 decades, the plant operators discontinued  
3 recarbonation."

4           Q     Okay. And that's stated in the --

5           A     2004.

6           Q     -- in the 2004 report of AH?

7           A     Yes.

8           Q     Okay. And have you -- in all of your  
9 work that you've done in this case, have you seen  
10 any indication in any document, including Dr.  
11 Hennet's report, that indicates that the  
12 recarbonation basin was used at any time from the  
13 decades prior to 2004 until 2025?

14          A     No.

15          Q     Okay. So while we're talking about the  
16 recarbonation basin -- we're on Page 4-2 -- I  
17 want to -- well, turn to Page 4-2 of AH 2004  
18 report that's attached to your report.

19          A     (Witness complies.)

20          Q     And this is what I want to ask you.  
21 Even though the recarbonation basin wasn't  
22 running, what role did it play in terms of your  
23 calculations regarding volatilization at the  
24 Hadnot Point water treatment plant?

25          A     The AH indicates that the recarbonation

1 basin created a constriction that caused water to  
2 back up in the effluent pipe of the spiractor and  
3 reduced the fall height. And so even though it  
4 was no longer operating as a recarbonation basin,  
5 water was still flowing through it to get from  
6 the spiractors to the filters.

7 Q This statement on Page 4-2 of AH. Can  
8 you read the sentence that starts "because of the  
9 downstream recarbonation basin"? Can you read  
10 that?

11 A Because of the downstream recarbonation  
12 basin at the plant, the available head loss --

13 Q The available --

14 A -- the available head does not appear to  
15 allow fall height of greater than approximately 1  
16 foot.

17 Q And?

18 A And the effluent pipe is likely to be  
19 flowing full.

20 Q Okay. What does that mean, the  
21 available head? What's the available head that  
22 does not appear to allow fall height of greater  
23 than 1 foot? What's that available head mean?

24 A That's just the energy of being able to  
25 -- the fall height that the water can go.

1           Q     Okay. And so what is it about the  
2     Hadnot Point water treatment plant that's not  
3     allowing the fall height to be greater than 1  
4     foot?

5           A     The recarbonation basin creating a  
6     blockage, if you will, to the water flowing.

7           Q     And if -- if the water treatment plant  
8     is not running and the spiractor is empty, would  
9     one be able to see the fact that the fall height  
10    can't be greater than 1 foot?

11           MS. HORAN: Objection to form.

12           THE WITNESS: No. You couldn't -- you  
13    can only determine that under hydraulic flowing  
14    conditions.

15           Q     (BY MS. BAUGHMAN) Okay.

16           A     Then as we said before, Figure 4-3 shows  
17    a nice demonstration of what it looks like  
18    without the back. Holcomb Boulevard that didn't  
19    have the restriction has a much cleaner, deeper  
20    fall height.

21           Q     Okay. So just for the record, did  
22    Holcomb Boulevard have a recarbonation basin?

23           A     No.

24           Q     Okay. And so you're saying Figure 4-3  
25    shows what -- what -- the fall would look like --

1 or what the flow would look like at the spiractor  
2 without a recarbonation basin.

3 A With a 2-foot fall height.

4 Q Okay.

5 A And AH points that out in their  
6 document.

7 Q Okay.

8 A They say, on Page 4-2, if I might,  
9 "However, Holcomb Boulevard water treatment  
10 plant, because of the absence of recarbonation,  
11 water falls approximately 2 feet to the bottom of  
12 the pipe section."

13 MS. BAUGHMAN: Can I -- do you have any  
14 stickers over there?

15 THE REPORTER: (Hands exhibit stickers  
16 to Ms. Baughman.)

17 MS. BAUGHMAN: Thank you.

18 What's our next one? Next exhibit?

19 MS. O'LEARY: We're at 14.

20 MS. BAUGHMAN: 14 is next?

21 MS. O'LEARY: No. 15.

22 MS. BAUGHMAN: 15. Thank you.

23 MS. HORAN: Do you want to just do  
24 Plaintiffs' Exhibit 1?

25 MS. BAUGHMAN: It does say Plaintiffs'



1 Exhibit. You want me to start with 1, then?

2 MS. HORAN: Yeah, I think that would  
3 probably be cleaner.

4 MS. BAUGHMAN: Okay. All right.  
5 (Plaintiffs' Exhibit 1 marked for identification)

6 MS. HORAN: Do you have a copy of it for  
7 me?

8 MS. BAUGHMAN: Yes. But I'm just not  
9 quite ready yet.

10 MS. HORAN: Oh, Sorry.

11 MS. BAUGHMAN: Give me a second.

12 Q (BY MS. BAUGHMAN) If you could turn to  
13 Page 16 of your report which is Exhibit 2.

14 A (Witness complies.)

15 Q Okay. I'm going to turn your attention  
16 to the second full paragraph where you refer to  
17 Maslia's table -- and this is in the context --  
18 this is discussing your Opinion Number 2;  
19 correct?

20 A Say again. This is...

21 Q Okay. So just for context, we're  
22 talking about Opinion Number 2 here.

23 A 2. Correct.

24 Q Okay. And in this Page 16, the second  
25 full paragraph, you reference a document CLW606

1 regarding the July 28, 1982 samples.

2 Do you see that?

3 MS. HORAN: Objection to form.

4 THE WITNESS: Yes.

5 Q (BY MS. BAUGHMAN) Okay. So I'm going  
6 to hand you what I've marked Plaintiffs' Exhibit  
7 1. And is Plaintiffs' Exhibit 1 CLW606 that you  
8 referenced in your report at Page 16?

9 A Yes.

10 Q It is? Okay.

11 So in your report, you're referring to  
12 samples of the Hadnot Point water treatment plant  
13 taken on July 28, 1982; correct?

14 MS. HORAN: Objection to form.

15 I think you meant Tarawa Terrace.

16 MS. BAUGHMAN: Thank you. Let me -- let  
17 me -- let me try that again.

18 Q (BY MS. BAUGHMAN) On your report on  
19 Page 16, when you're referring to CLW606, you're  
20 referring to July 28, 1982 samples taken at  
21 Tarawa Terrace.

22 A Yes. Tarawa Terrace. Yes.

23 Q And they're both raw water and treat  
24 water; correct?

25 A Yes. Correct.

1 Q And what were the findings?

2 A The raw water was 76 and the treated  
3 water was 82.

4 Q Okay. Samples taken on the same day?

5 A Yes. That's --

6 Q Okay. And you cited Exhibit 1, CLW606,  
7 in support of that proposition; correct?

8 A Correct.

9 MS. HORAN: Objection to form.

10 Q (BY MS. BAUGHMAN) Okay. I want to turn  
11 your attention to -- well, first of all, the  
12 first page of 606. This tells -- who wrote this  
13 document? Who's the author?

14 MS. HORAN: Objection to form;  
15 foundation.

16 MS. BAUGHMAN: What's the objection to  
17 asking who the author is so I can -- so I can  
18 rephrase the question, what's the objection?

19 MS. HORAN: So I mean, we can all read  
20 what this document says, but I don't know if what  
21 he's --

22 MS. BAUGHMAN: So what's wrong with the  
23 form?

24 MS. HORAN: -- his understanding of this  
25 is.

1 MS. BAUGHMAN: Okay. Okay.

2 Q (BY MS. BAUGHMAN) Dr. Sabatini, who is  
3 the author of Exhibit 1, CLW606?

4 MS. HORAN: Same objection.

5 THE WITNESS: Ms. Betz.

6 THE REPORTER: I'm sorry. What was the  
7 answer?

8 THE WITNESS: B-e-t-z.

9 Q (BY MS. BAUGHMAN) Okay. And what was  
10 Ms. Betz's job title, according to the document?

11 A Quality control lab.

12 Q Okay. So if you turn to the second page  
13 on Paragraph Number 8, does Ms. Betz provide any  
14 opinion regarding the significance of the raw and  
15 treated samples that you cite in your report in  
16 terms of what she thought about what that told  
17 her?

18 MS. HORAN: Objection to form;  
19 foundation.

20 THE WITNESS: Point 8, she comments on  
21 the tetrachloroethylene from Tarawa -- well, yes,  
22 she does.

23 Q (BY MS. BAUGHMAN) And what does she  
24 say?

25 A Level of tetrachloroethylene from Tarawa

1 Terrace system averaged --

2 Q Let me withdraw that.

3 A Okay.

4 Q Let me ask you this.

5 Do you see where she starts with  
6 "therefore"?

7 A Therefore. Therefore. Yes. Okay.

8 Q Okay. What does Ms. Betz tell us in  
9 terms of what she thought the difference was  
10 between the raw and treated samples at Tarawa  
11 Terrace?

12 A "Therefore, with no significant  
13 difference between raw and treated samples."

14 Q Okay. So what -- so Ms. Betz -- you see  
15 at the bottom, she signed this document?

16 A Supervisor chemist.

17 Q With a signature; correct?

18 A Correct.

19 Q So do you agree with Ms. Betz that there  
20 was no significant difference between the raw and  
21 treated samples at Tarawa Terrace on July 28th of  
22 1982?

23 MS. HORAN: Objection to form.

24 THE WITNESS: Correct.

25 Q (BY MS. BAUGHMAN) What was your answer?

1           A     Yes.  Correct.

2           Q     Okay.  And let me ask you this.  You  
3     also looked at some comparisons between raw and  
4     treated samples for Hadnot Point; correct?

5           A     Yes.  On -- yes.

6           Q     Okay.  And you discuss that on Page 15  
7     of your report.

8           A     Correct.

9           Q     Okay.  And defense counsel asked you  
10    some questions about the December 4, 1984  
11    samples.  But can you tell me what the results  
12    were for July 27, 1982, in terms of the  
13    difference between the raw and treated samples at  
14    Hadnot Point?

15          A     July 27th.  Nineteen and 21.

16          Q     '82.

17          A     Yeah.  19 micrograms per liter and 21  
18    micrograms per liter.

19          Q     Okay.  Now, you've referenced that and  
20    several other pairs of samples taken for raw and  
21    treated on the same day for Hadnot Point;  
22    correct?

23          A     Correct.

24          Q     Okay.  So what significance if any to  
25    your opinions is there comparing these raw

1 untreated samples at Hadnot Point and Tarawa  
2 Terrace with regard to your Opinion Number 1?

3 A They were reinforced -- they validate --  
4 they support the lack of volatilization minimal  
5 to -- minimal to negligible volatilization. They  
6 help support my calculations that the losses  
7 would be minor.

8 Q Okay.

9 A They help support my opinion which was  
10 minor losses.

11 Q Now, I want to go back to the AH 2004  
12 report for a moment. Do you know what AH based  
13 its opinions and conclusions on in that report?

14 MS. HORAN: Object to the form.

15 THE WITNESS: Well, they state it  
16 upfront. So Page 1-1. Bottom paragraph.  
17 They're retained by Camp Lejeune. Scope of work  
18 included developing estimates. As part of this  
19 effort, AH conducted a literature review, a  
20 search of appropriate archives to assist in the  
21 development referenced estimates of VOC losses,  
22 removal rates.

23 And also in their 2005 expert panel,  
24 they discuss further the -- all that they did.  
25 Evaluating all the basins, looking for any

1        disruptions in the basins, et cetera.

2            Q        (BY MS. BAUGHMAN)    Okay.    Give me just a  
3        moment.

4            Okay.    If you could turn to Page 2-5.  
5        Section 2.3 under water plant descriptions.

6            A        Uh-huh.

7            Q        What did AH base its description of the  
8        water plant on?

9            A        Based on interviews with base personnel,  
10       site visits, examinations of design, and as-built  
11       drawings pertain to part of this project.

12          Q        Okay.    Do you know whether AH, in coming  
13       up with its opinions and conclusions regarding  
14       the extent of volatilization at the water  
15       treatment plants at Camp Lejeune, whether they  
16       took into account any kind of agitation or  
17       splashing in the tanks or the air -- or the water  
18       towers or the water reservoirs?

19          A        In their expert report, they comment  
20       that they looked for any evidence of agitation  
21       and they narrowed it down to the things that they  
22       based their calculations on.

23          Q        So when you say expert report --

24          A        I'm sorry.    Panel.    Expert panel.

25          Q        Okay.    And when you expert panel, are



1 you referring to the comments by Dr. Pommerenk?

2 A Yes.

3 Q From what year?

4 A 2005.

5 Q Okay. And so what did Dr. Pommerenk say  
6 in 2005 rather about whether they took agitation  
7 into account in reaching their conclusions on  
8 volatilization?

9 A Said that they took all those factors  
10 into consideration in identifying where they  
11 needed to focus their calculations and their  
12 estimations.

13 Q Okay.

14 MS. BAUGHMAN: Okay. I'll pass the  
15 witness.

16 FURTHER EXAMINATION

17 BY MS. HORAN:

18 Q Do you know what percentage of water in  
19 any of the paired treated and untreated samples  
20 that you cited in your report -- do you know if  
21 -- what wells any of those samples came from?

22 A What any of those...

23 Q Samples came -- what wells were on when  
24 those pairs were taken. Do you know what wells  
25 were on?

1 A Not off the top of my head. No.

2 Q Do you know whether the wells or pump  
3 rates of the wells consistent at the time of any  
4 of the paired treated and untreated samples?

5 MS. BAUGHMAN: Object to the form.

6 THE WITNESS: I'd have to look in the  
7 documentation.

8 Q (BY MS. HORAN) So sitting here today,  
9 you don't know the answer?

10 A No.

11 Q At one point in your questioning with  
12 your counsel about the amended materials  
13 considered list, you said in reference to new  
14 documents that were added that you've reviewed  
15 since filing your rebuttal report.

16 The CLW you mentioned. What document  
17 were you referencing when you said that?

18 A I don't remember the number. It was one  
19 that -- right now, I don't recall.

20 MS. BAUGHMAN: I handed you what I  
21 thought it was earlier today. You can ask him if  
22 that's it.

23 THE WITNESS: Yeah, that's --

24 MS. BAUGHMAN: And to tell you the  
25 truth, that document that I handed you, the

1 important part, is 606 which he already had.

2 THE WITNESS: Okay. That's it then.

3 Q (BY MS. HORAN) It's the 606 document  
4 that you were thinking of?

5 A Yes.

6 Q It doesn't look like that was included.

7 MS. HORAN: This is not intended to be a  
8 memory test. Could you just identify?

9 MS. BAUGHMAN: Can I see that one?

10 MS. HORAN: (Hands document to Ms.  
11 Baughman.)

12 MS. BAUGHMAN: Yeah. Thank you.

13 Can we go off the record for a second.

14 THE VIDEOGRAPHER: We're off the record  
15 at 6:13 p.m.

16 (Off the record from 6:13 p.m. to 6:14 p.m.)

17 THE VIDEOGRAPHER: We're back on the  
18 record at 6:14 p.m.

19 Q (BY MS. HORAN) Would you agree that if  
20 pump rate or fractive pumping of wells that were  
21 the source of contamination varied such that the  
22 system was not always at a steady state for  
23 contaminant concentration entering the water  
24 treatment plants --

25 MS. BAUGHMAN: Objection to the form.

1 Q (BY MS. HORAN) -- then the samples  
2 would not show a quantity of treatment losses?

3 MS. BAUGHMAN: Object.

4 Q (BY MS. HORAN) When I say the samples,  
5 I mean the paired samples.

6 A That's speculative. There's certainly  
7 that possibility.

8 MS. HORAN: I don't know that we need  
9 to --

10 Q (BY MS. HORAN) I believe you testified  
11 earlier that you had reviewed Dr. Longley's  
12 expert report. He's the historian.

13 A Dr...

14 Q Longley. He's a historian.

15 A Yes. Yes.

16 MS. HORAN: We don't -- we don't see  
17 this on the materials considered list.

18 MS. BAUGHMAN: I think he's confused. I  
19 think he reviewed Brigham, and he's thinking  
20 Longley. I -- I don't know that he's reviewed  
21 Longley. I don't think he has.

22 MS. HORAN: Well, could you follow up  
23 and follow up with us?

24 THE WITNESS: Longley's --

25 Q (BY MS. HORAN) The historian.

1 A Right.

2 Q Yeah.

3 MS. HORAN: Can we just -- can you just  
4 follow up with us, Laura? We'll just find out.

5 MS. BAUGHMAN: Hold on. Okay. Are you  
6 done?

7 MS. HORAN: Yeah. Nothing further.

8 MS. BAUGHMAN: Okay. I'll tell you, for  
9 the record -- I've confirmed it -- he's never  
10 been provided Longley. He's confused because  
11 you're saying "historian".

12 THE REPORTER: We're still on?

13 MS. BAUGHMAN: Yes. We're still on.

14 He's confused because you're saying  
15 historian, so he's assuming that's the historian  
16 that he had reviewed. Okay? He reviewed  
17 Brigham, and that's on the list.

18 MS. HORAN: We just wanted to understand  
19 the --

20 MS. BAUGHMAN: So I'm not going to  
21 supplement because --

22 MS. HORAN: That's fine.

23 FURTHER EXAMINATION

24 BY MS. BAUGHMAN:

25 Q How many -- let me -- I'm going to ask

1 you a few follow-ups.

2 How many different historian expert  
3 reports did you review?

4 A One that I recall.

5 Q Okay. Was that Dr. Brigham?

6 A Yes.

7 Q Okay. So did you review Dr. Longley's  
8 report?

9 A Not to my recollection.

10 Q Okay. Were you confused because she  
11 used the word historian?

12 A Yeah. Historian. I mean....

13 Q Okay. Let me just ask you a couple of  
14 other things.

15 So you have these paired samples that  
16 you're relying on for your Opinion Number 2 which  
17 also relate to your Opinion Number 1 which you  
18 talked about earlier; right? Correct?

19 A Correct.

20 Q Okay. And you've been asked by defense  
21 counsel some questions about, well, do you know  
22 which wells were pumping and what if they  
23 changed.

24 What's the likelihood that that wells  
25 would be pumping differently on the same day such

1     that it would change the results?

2             MS. HORAN:  Objection to form.

3             Q     (BY MS. BAUGHMAN)  What's your opinion  
4     on that based on all the work --

5             A     That seems --

6             Q     -- based on all of the work you've done  
7     and the documents you've reviewed?

8             MS. HORAN:  Objection; foundation.

9             THE WITNESS:  That would seem very  
10    unlikely.  Very unlikely.

11            Q     (BY MS. BAUGHMAN)  Does the concept that  
12    the different wells could have been pumping at  
13    different times on the same day change your  
14    confidence in your reliance on the paired samples  
15    to support your Opinions 1 and 2?

16            MS. HORAN:  Objection to form.

17            THE WITNESS:  No.

18            Q     (BY MS. BAUGHMAN)  And why is that?

19            A     Just the unlikely nature in that it  
20    would happen on each of those episodes and each  
21    of those times.

22            Q     (BY MS. BAUGHMAN)  Okay.

23            MS. BAUGHMAN:  I'll pass the witness.

24            MS. HORAN:  Nothing.

25            MS. BAUGHMAN:  Go ahead.

1 MS. HORAN: Nothing further.

2 Thank you, Dr. Sabatini, for your time  
3 today.

4 THE WITNESS: Thank you.

5 THE VIDEOGRAPHER: We're off the record  
6 at 6:19 p.m.

7 THE REPORTER: Can both of you right  
8 here state just for the record, your order for  
9 the transcript? Are you ordering the transcript?

10 MS. BAUGHMAN: Yes. But that's all with  
11 Golkow, and there's a whole leadership committee.  
12 So I want whatever we normally do. Okay.

13 MS. HORAN: Can we have a three-day  
14 turnaround, please?

15 (Deposition concluded at 6:19 p.m.)  
16  
17  
18  
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25



J U R A T

STATE OF OKLAHOMA )  
 ) SS:  
COUNTY OF \_\_\_\_\_)

I, DAVID ALLEN SABATINI, PH.D, PE,  
BCEE, do hereby state under oath that I have read  
the above and foregoing deposition in its  
entirety, and that the same is a full, true, and  
correct transcription of my testimony so given at  
said time and place, except for the corrections  
noted.

\_\_\_\_\_  
DAVID ALLEN SABATINI, PH.D, PE, BCEE

Subscribed and sworn to before me, a  
Notary Public in and for the State of Oklahoma by  
said witness, DAVID ALLEN SABATINI, PH.D, PE,  
BCEE, on the \_\_\_\_\_ day of \_\_\_\_\_ 2025.

\_\_\_\_\_  
Notary Public in and for the  
State of Oklahoma

My Commission Expires:\_\_\_\_\_

My Commission Number:\_\_\_\_\_

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A Veritext Division  
Case 7:23-cv-00897-RJ    Document 401-3    Filed 06/04/25    Page 354 of 446

C E R T I F I C A T E

STATE OF OKLAHOMA )

) SS:

COUNTY OF OKLAHOMA )

I, Lana L. Ledford, a Certified  
Shorthand Reporter within and for the State of  
Oklahoma, certify that DAVID ALLEN SABATINI,  
PH.D, PE, BCEE was sworn to testify the truth;  
that the deposition was taken by me in stenotype  
and thereafter transcribed by computer, and is a  
true and correct transcript of the testimony of  
the witness; that the deposition was taken on  
APRIL 11, 2025, AT 120 NORTH ROBINSON AVENUE, 4TH  
FLOOR, OKLAHOMA CITY, OKLAHOMA 73102; that I am  
not an attorney for nor relative of either party,  
or otherwise interested in this action.

Witness my hand and seal of office on  
the 16TH day of APRIL 2025.

<%824,Signature%>

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LANA L. LEDFORD, CSR  
for the State of Oklahoma  
CSR #01776

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

Veritext Legal Solutions is committed to maintaining the confidentiality of client and witness information, in accordance with the regulations promulgated under the Health Insurance Portability and Accountability Act (HIPAA), as amended with respect to protected health information and the Gramm-Leach-Bliley Act, as amended, with respect to Personally Identifiable Information (PII). Physical transcripts and exhibits are managed under strict facility and personnel access controls. Electronic files of documents are stored in encrypted form and are transmitted in an encrypted

fashion to authenticated parties who are permitted to access the material. Our data is hosted in a Tier 4 SSAE 16 certified facility.

Veritext Legal Solutions complies with all federal and State regulations with respect to the provision of court reporting services, and maintains its neutrality and independence regardless of relationship or the financial outcome of any litigation. Veritext requires adherence to the foregoing professional and ethical standards from all of its subcontractors in their independent contractor agreements.

Inquiries about Veritext Legal Solutions' confidentiality and security policies and practices should be directed to Veritext's Client Services Associates indicated on the cover of this document or at [www.veritext.com](http://www.veritext.com).